THE

INDIA DIRECTORY,

&c. &c.

THE

INDIA DIRECTORY,

OR,

DIRECTIONS FOR SAILING

TO AND FROM THE

EAST INDIES,

CHINA, AUSTRALIA, AND THE INTERJACENT PORTS

OF

AFRICA AND SOUTH AMERICA:

COMPILED CHIEFLY FROM

ORIGINAL JOURNALS OF THE HONOURABLE COMPANY'S SHIPS,

AND FROM

OBSERVATIONS AND REMARKS,

RESULTING FROM THE EXPERIENCE OF TWENTY-ONE YEARS IN THE NAVIGATION OF THOSE SEAS.

BY

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They that go down to the sea in ships, that do business in great waters; these see the works of the Lord, and his wonders in the deep.—Psalm cvii. 23, 24.

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EASTERN SIDE

OF THE

BAY OF BENGAL.

COASTS OF CHITTAGONG, ARACAN, AND AVA.

COAST OF CHITTAGONG.

White Cliffs and adjacent coast.

THE WHITE SANDY CLIFFS, fronting the sea on the northern part of the coast of Aracan, extend from lat. 21° 17′ N. to 21° 24′ N., being not above $2\frac{1}{2}$ or 3 leagues to the northward of Elephant Point in lat. 21° 10′ N. The land to the northward of these cliffs is separated from Mascall Island and the Coast of Chittagong by the opening or strait of Cruzcool, which opening has deep water inside, but will only admit small vessels in the narrow channel, formed between a reef that fronts the mainland at Coxe Bazar, and Red Crab Reef that stretches from the south end of Mascall Island, about 2 leagues to the southward and S. Westward. Red Crab Isle, lying near the S. Western extremity of this reef, in lat. 21° 26′ N., and about $2\frac{1}{2}$ miles from the S.W. end of Mascall Island, is merely a dry sand, with some shrubs on it, having breakers extending around to a considerable distance, with 10 and 11 fathoms near the west edge of the reef, and 3 or 4 fathoms near its southern extremity. Between this reef and the mainland there is a channel leading to Coxe Bazar and to the S. E. point of Mascall Island. It has from $1\frac{1}{2}$ to $3\frac{1}{2}$ fathoms on the bar, and from 5 to 8 fathoms inside.

Red Crab Island and Reef.

Coxe Bazar.

January 22nd, 1825, Captain Crawford, in the Research, worked into Coxe Bazar, with the flotilla of gun vessels in company, and the least water on the bar was 3 fathoms* hard bottom. At noon anchored in the harbour, in 12 fathoms, extremes of Mascall Island from North to N. W. by W., centre of Red Crab Tree Island Reefs W. N. W. $\frac{3}{4}$ W., another island W. $\frac{1}{2}$ N., entrance of Ramoo Creek S. E., distant a quarter of a mile, Sandy Entrance Point S. S. W. $\frac{1}{4}$ W., and the Outer Pagoda on a Hill S. by E. $\frac{1}{4}$ E.

Aracan Coast.

From lat. 20° 50′ N. to the White Cliffs, the coast of Aracan, except near Elephant Point, which has a reef off it, is safe to approach, with tolerable anchorage. Vessels bound to Chittagong, or those that may be driven to the eastward by stress of weather in the S.W. monsoon, usually endeavour to make this part of the coast; but it requires great caution, the weather being mostly cloudy or stormy, and the White Cliffs are low and not easily discerned, unless the sun is shining bright to the westward; if there-

* Captain Ross found only $1\frac{1}{2}$ fathoms on the bar at low water, during his survey of the coast in 1833. When Captain Crawford crossed the bar, it was probably near high water, the rise and fall of tide being about 12 feet.

fore a ship get close in, with a strong breeze, and a tide of 4 knots on the flood, she will not be able to haul out sufficiently to clear the Kootubdea sands, more particularly the outer patch, and will therefore be obliged to anchor in a heavy sea, with strong tides, an alternative at all times, if possible, to be avoided.

Water.

Between the *third* and *fourth* Sandy Cliffs, reckoning from the northward, there is a small run of fresh water, where ships which happen to be becalmed in the fair season might obtain a supply of that necessary article.

Directions on making the land.

Sand Banks.

North Patch.

South Patch.

Tides.

If a ship make the land here, she must haul immediately to the westward, to avoid the Banks of Mascall and Kootubdea, which commence in lat. 21° 25′ N. off the entrance of Coxe Bazar: they consist of two long spits, extending North and South, separated by a channel about 5 miles wide, with regular soundings in it from 10 to 12 fathoms. The Inner Spit, or Middle Ground, begins about 7 miles West from the south entrance of Red Crab Reef, and extending to the northward about the same distance from the west side of Mascall Island to lat. 21° 42′ N., then trends to N. N. E., and joins the great Reef at the south end of the Island Kootubdea: near its northern extremity from lat. 21° 36′ to 21° 40′ N. is the sand called the North Patch, which is steep with high breakers, having 9 and 10 fathoms water close to it on the outside, and from 2 to $3\frac{1}{2}$ fathoms farther to the southward. The Outer Spit, from lat. 21° 28′ to 21° 33′ N., is very dangerous, having in one spot, called the South Patch, in lat. 21° 31′ N., only 1 fathom water, from whence the depth increases on the north end of the Spit to 7 and 8 fathoms in lat. 21° 35′ N. Close to the western edge of this spit the depth is 10 fathoms, *decreasing to seaward*, to 5 and 6 fathoms about 7 leagues to the westward of the spit. The South Patch Sand is in lat. 21° 31′ N., and lon. 91° 40′ E., by the late survey of Captain Ross, who gives the following remark relative to this part of the coast. During the N. E. monsoon, the high land is not visible for several days together, and frequently the haze prevents Mascall Island from being seen from the channel, between the Outer Patch Sand and Middle Ground. The Southern or Outer Patch exhibits breakers in a fresh breeze, and in fine weather the rollers on it may be perceived, but the lead affords no guide in approaching. Between it and the Middle Ground, the velocity of the tide at the springs is from $3\frac{1}{2}$ to 4 miles an hour, and in this channel the ground is stiff and good for anchorage. The flood sets towards the entrance of Coxe Bazar and the channel that separates Muttabarry Island from Kootubdea, rendering it doubly necessary to keep a good offing, after seeing the White Cliffs.

Anchorage in hazy weather.

If hazy weather prevent the White Cliffs from being discerned until a ship approach near them, when the wind is too far westerly for her to clear the shoals, a place of shelter for small vessels may be found within the Outer Spit, but more particularly within the Inner one. To gain this latter place, pass Red Crab Island, bearing East $2\frac{1}{2}$, or 3 miles, and from this station, steer about N. by W. in 10 to 15 fathoms until the passage between Kootubdea and Muttabarry is quite open; then steer direct for the opening, about N. E. by N., in 7 to 10 fathoms water, taking care to avoid the dry shoals lining the shore on both sides of the entrance; having got within the point of Kootubdea, you may anchor secure in 10 fathoms, soft ground. From the point of that island, a spit extends S.W. by S. several miles, with breakers on it in some places; and a bank stretches from the Mascall shore to the distance of $1\frac{1}{4}$ miles, both of which will be avoided by keeping the passage quite open as directed above. It would be improper to run 1 mile within the point of Kootubdea, for about 2 miles within the entrance, a bank projects from that island more than half-way across the channel. Th[illegible] that separates Mascall Island from the mainland is narrow, having only 1 fath[illegible] in some places.

THE CHANNEL inside of Kootubdea, which separates it from Muttabarry Island and from the main, called Uckoia by the natives, is only safe for small vessels, the soundings in it being various, from $1\frac{1}{2}$ or 2, to 4, 5, and 6 fathoms. The northern entrance of this channel, formed between the north end of Kootubdea and Cuckold Point, is contracted by banks on each side, which stretch to a considerable distance to seaward, having $1\frac{1}{2}$, 2, or 3 fathoms in the passage between them. These banks are visible when the tide is low, but are overflowed in high tides, making it prudent for a vessel going in or out by this passage to keep a boat sounding on each bow. *Uckoia Channel.*

About 3 or 4 miles inside of Cuckold Point lies the entrance of Kentlaw River, having 3 or 4 fathoms between the banks that project from each side; this river affords good shelter in the S.W. monsoon for small vessels, but is not above a cable's length from side to side, and half a mile inside it divides into two branches: one of these takes an easterly direction to Julkuddar Fort, where there is fresh water; the other, called Khaut Colley, stretches to the West and N.W., and communicates with the sea a little to the northward of Cuckold Point, by which that part of the land forms an island. Khaut Colley River or Creek is very shoal, and will not admit vessels of any size, but the opposite entrance of Kentlaw, although narrow, forms a safe harbour. *Kentlaw River.*

MASCALL ISLAND is about 15 miles in length from North to South, and 7 miles in extreme breadth; it has some small elevations, and being the largest, the group is generally known by the name of the Mascall Islands. *Mascall Islands.*

MUTTABARRY ISLAND lies on the N.W. side of Mascall Island, and being only separated from it by a narrow channel, it is in some of the older charts represented as forming part of it.

KOOTUBDEA ISLAND is low and woody, about 4 leagues in length nearly N. by E. and S. by W., the north end being in lat. 21° $56\frac{1}{4}'$ N. On the south end there is fresh water close to a tope of trees, and several creeks are formed on the eastern side; one of these, called Pilot Cotta Creek, divides the island into two parts, having 5 or 6 fathoms water at its eastern entrance, and 5 feet on the bar, where it joins the sea on the west side of the island. The south part of this island has extensive sands projecting from it, as already described.

About $3\frac{1}{2}$ leagues from the north end of Kootubdea, and $2\frac{1}{2}$ leagues from Chittagong River, is the entrance of Anghor Colley or Sunkar River, which has shoals barring it, and lining the coast from thence southward; this having a large opening, may at first be mistaken for Chittagong River.

A ship being abreast of Elephant Point, in lat. 21° 10′ N., or the southern part of the White Cliffs, in lat. 21° 16′ N., in 18 fathoms water, and bound to Chittagong, with the wind fair, a north course will carry her outside of the shoals, if there be no oblique tide in passing them, with an offing of not less than 4 to $4\frac{1}{2}$ leagues from Mascall Islands. When the south end of Kootubdea bears E. by N., she will be past the north end of the outermost shoal, and may haul in more toward the shore, keeping an offing in 9 or 10 fathoms full $2\frac{1}{2}$ leagues from Kootubdea. When past this island, she may haul still nearer the shore, and steer along it about a league distant in 6 fathoms, until the mouth of Chittagong River is seen. The distance from Kootubdea to the …r's mouth is about 6 leagues, and the course N. $\frac{3}{4}$ W.; the coast between them is … and flat near the sea, but hilly 2 leagues inland. If the weather is clear, it will not be easy to mistake Anghor Colley entrance for that of Chittagong River, nor to miss *From the White Cliffs to Chittagong River.*

the latter, situated in lat. 22° 13′ N. The chain of hills between Kootubdea and the river, situated about 6 miles inland, ends in a point about 3 miles South of the parallel of the river's mouth. To the N.W. 4 or 5 miles from the end of this chain of hills, there are two small detached clusters of hills within 3 miles of the shore, the northernmost of which lies close behind the Bunder, or anchoring place, in the river.

The Fakier's Tree is thick and bushy, situated 3 miles to the southward of Norman Point, and 4 miles north of Anghor Colley, and being close to the shore, may be discerned although the weather be hazy.

In clear weather, the hill called Skakbroage, with two round trees and a flagstaff on it, may be seen when abreast of the Fakier's Tree, bearing N. ½ E., distant 10 or 11 miles; this hill terminates to the South, a chain of low hills extending parallel to the coast, in which Seetacoon Hill, opposite to the Island Sun-Deep, is the highest and most remarkable, having on it a small Pagoda.

The bottom between Kootubdea and Chittagong River is stiff and good for anchorage; a ship bound into the river, wanting a pilot, should anchor abreast of the Fakier's Tree in 6 fathoms, about 1½ miles from the shore, from whence a gun may be heard at Islamabad; but in strong gales, the sea here runs very short, and often breaks over a small vessel.

It would be dangerous to enter the river without a pilot, but the following directions may be useful, if obliged to run into it from necessity.

Chittagong River.

CHITTAGONG* RIVER ENTRANCE is formed on the N.W. side by Petunga Point and a contiguous sandy islet fronting the sea; and on the east side by Norman Point, which is low, and projects very little from the coast line. The breadth of the entrance between these points is about 1¼ miles, but the channel is scarcely a quarter of a mile wide, and leads close to Petunga Point, being contracted on the eastern side by sands, dry at low water, and partly so at half ebb, which extend from Norman Point about a mile to the N.W. and Westward, and nearly 1½ miles to the S.W., where it forms the eastern boundary of the bar. From the sandy islet that fronts Petunga Point, a sand projects about half a mile to the S. Westward, and bounds the entrance of the channel and the bar on the west side, the latter having 2 and 2¼ fathoms on it at low water spring tides.

When the river is well open, the best guide to enter it seems to be, to bring Petunga Point on the N.W. side of the entrance to bear N. ½ E. or N. by E., and with this bearing to steer for it, as the channel leads close to that side of the entrance. When within the bar, and near Petunga Point, the channel continues in a N. by E. N. E. direction, or a little to the left of the flagstaff on a small hill on the eastern side of the river, and nearly in a direct line with some trees on *small risings*, to the northward of the flagstaff. Having approached the eastern shore when nearly abreast of the flagstaff, the channel is there close along this shore for about 2 miles, or until you are close to the mouth of the second creek on the eastern side, counting from the flagstaff mount. From the mouth of this creek, the channel takes a West and W. by N. direction to a point on the western shore, and it then continues close along this side of the river to the town of Islamabad, or Chittagong, where you must anchor and moor immediately, the channel being only about a cable's length across. From the anchorage Shakbroage bears North. The soundings in the channel are usually from 2 or 2¼ fathoms, to 3

Tides.

and 3½ fathoms at low water spring tides, and in October, the rise of tide is 15 feet at

* Properly, *Chateegaon.*

the flagstaff, and 13 feet outside, on the springs, and about 10 feet on the neaps. High water at the flagstaff on full and change of the moon, at 1 hour 30 minutes, and at 1 hour outside the bar, where the flood sets about N. N.W., and the ebb to the S. S. E., with a velocity of 3 to 4 miles an hour, usually, on the springs.

Mr. P. G. Sinclair, Senior Branch Pilot at Calcutta, gives the following directions for ships bound to Chittagong. The usual track from the Eastern Channel to Chittagong is to cross the Patch Sand, and sight the White Cliffs about Coxe Bazar, keeping to the westward of Red Crab Island, and working up betwixt the two outer sands; which track seems proper in some periods of the S.W. monsoon, when cloudy weather often prevents observations from being obtained. But in the fine weather months of either monsoon, the shortest and best passage, and having more room for working if requisite, will be found to the westward of the Patch Sand; and the best guidance thereto is, by steering E. by N. from the tail of Sagor Sand, until you shoal on the leading sand to Chittagong into 5 fathoms, then steer due East, and you will deepen gradually into 10 or 12 fathoms at the western edge of the Patch Sand: if you make the northern part of this sand, you will shoal suddenly into 5 and 3 fathoms, therefore it is advisable for all ships bound to Chittagong, to haul to the northward after getting one cast of 10 or 11 fathoms, the worst part of the Patch Sand being its northern end, which is easily discernible in blowing weather by the agitated water upon it. At the distance of ½ a mile to the northward of it, you may cross to the eastward, carrying 7 and 8 fathoms water; and thus situated, any vessel may steer towards Chittagong River on a northerly course, with safety. There is a pilot constantly in attendance, to carry ships into the river, and there are buoys placed on the sands to point out the channel. Directions from the River Hoogly to Chittagong.

In the S.W. monsoon, the bar of the river looks frightful, as the sea breaks over it in most places, and the eastern side of the entrance is bounded by sands, which dry at half ebb, or at low water. The best time to enter the river is at high water *slack*; as the flood sweeps rapidly across the entrance, it is dangerous to attempt going in while it is making. Next to high water slack, the best time to enter it is when the ebb has begun to make; but then there is a risk of being driven on the flat off Norman's Point.

ISLAMABAD, the principal town on the coast of Chittagong, in lat. 22° 20′ N., lon. 91° 51′* E., or 3° 30′ East of Fort William, by the survey of Captain Ross, in 1833, is about 2½ leagues from the entrance of the river; it is a place of some trade, under the Bengal Government, there being a marine yard, where ships of considerable burthen are constructed, and good sail-cloth manufactured. Grain is procured at a very reasonable rate, the adjacent country abounding in rice. Islamabad.

D'Apres Shoal is placed by Lieutenant Criddle in lon. 91° 13′ E., about 13 leagues westward of the Chittagong coast, extending about 3½ miles North and South, or from lat. 21° 52′ to 21° 55½′ N., and having soundings from 4 to 3½ fathoms near it; between it and Chittagong River, the depths are from 4½ to 4 fathoms. D'Apres Shoal.

BOMINY HARBOUR, in lat. 22° 39′ N., about 12½ leagues to the northward of Chittagong River, was formerly a place of shelter for ships, when they happened to be driven to the northward of the river during southerly winds; but the vast quantity of soil carried down the great rivers is said to have filled up this harbour, and the channel leading to it, so that the depths, which were formerly 5 and 6 fathoms, are not more than 2 or 3 fathoms at the present time. Bominy Harbour.

* In 1764, an observation of the transit of Venus over the sun's disc made it in 91° 45′ E.

COAST OF ARACAN.

Elephant Point.

ELEPHANT POINT, or DOMBUCK POINT, in lat. 21° 10′ N., lon. 92° 4′ E., by the late survey, is about 3 leagues S. by E. from the southern extremity of the range of white cliffs fronting the sea on the northern part of the coast of Aracan, and may be seen 5 leagues from the deck: a reef projects about a mile from the point, which should not be approached under 8 fathoms at 1½ or 2 miles' distance.

Shapooree Island, and Naaf River.

SHAPOOREE ISLAND, the centre of which is in lat. 20° 46′ N., lon. 92° 20′ E., distant 9½ leagues to the S. S. Eastward of Elephant Point, and fronting the Naaf River, is 3½ miles in length, surrounded by shoals, which project about 2 miles to the westward, nearly joining the shoals off St. Martin Island, which is about 2 leagues distant in a southerly direction. There is an intricate channel between them, about 1½ and 2 miles to the southward of the former island, leading into the river, the entrance to which is bounded on the east side by Cypress Point. Tek-Naaf is a low point of land, a little to the northward of Shapooree Island, and together with this island forms the western boundary of the river, which extends in a N. by W. direction nearly parallel to the coast, as far as Elephant Point. Although the Naaf River has depths of 12 to 8 and 7 fathoms, when inside the bar and outer shoals, yet, in the opinion of Captain Crawford, who took the Research and Flotilla into this river in January, 1825, it will always be dangerous for shipping; because, on the flood tide, the surf and swell runs too high in 3 fathoms water for ships to cross the outer bar, which has 3½ fathoms hard bottom on it at high water, and this is the safest time to pass between the outer shoals into the river. It is high water on full and change of the moon at 9h. 0m.

St. Martin Island.

ST. MARTIN ISLAND, formed of two divisions united by a dry ledge of rocks, extends from lat. 20° 34½′, to 20° 38¾′ N., and its north end is distant 5 miles due South from Shapooree, and 4 or 5 miles from the nearest shore; it is low, lined by a reef on the west side, which projects also a little way from the south point, and nearly 3 miles from the north extremity of the island in a North and N. by W. direction, towards the shoals which front the mouth of the River Naaf, and the Island Shapooree. There are extensive reefs with breakers about midway between the main and St. Martin Island, but near the east side of the island there is anchorage in 5 and 6 fathoms, where the transports anchored in 1825, and procured fresh water from the springs.

St. Martin Reef.

ST. MARTIN REEF,* in lat. 20° 37¾′ N., is very dangerous, distant about 5½ miles directly West from the north part of St. Martin Island, having high breakers on it at times, and it is of considerable extent in a N. by W. and S. by E. direction. Very near it on the outside there are 9 and 10 fathoms water, with 7 or 8 to 9 fathoms hard ground, in a safe channel between it and the island. Ships passing this reef in the night should not come under 20 fathoms: and it may be observed, that from this part of the coast, soundings extend directly across the bay, to Point Palmiras.

Asseerghurr Shoal.

ASSEERGHURR SHOAL, in lat. 20° 28′ N., about 11 miles to the S. E. of the South Point of St. Martin Island, and 5½ or 6 miles off shore, is also dangerous. There is a channel with 6½ and 7 fathoms water betwixt it and the main, and 8 fathoms close

* This name is applied in Capt. Ross's chart to the reef adjoining St. Martin Island, and not to the danger here described.

to it on the outside. The coast between the Naaf and Aracan Rivers is lined by a shoal bank, having 3 or 4 fathoms on the edge of it in some places, at 2 or 3 miles' distance off shore.

OYSTER ISLAND, in lat. 20° 12′ N., lon. 92° 33′ E., and 11 miles off shore, is very little above water, and is small, rocky, and dangerous, having a narrow bank or ridge, with shoal water on it, extending several miles from the Dry Rock in a south-easterly direction, and nearly joining another spit of $1\frac{1}{2}$ fathoms, called the Oyster Reef, in lat. 20° 5′ N.: there is a gap or passage of 6 and 7 fathoms between these spits, and from 11 to 10 fathoms water close to them on the outside. Miou or Mijou River entrance, in lat. 20° 15′ N., distant 13 miles E. N. Eastward of the Oyster Island, has a shoal bank on each side, with $1\frac{1}{2}$ or 2 fathoms on the bar betwixt these reefs, by which it is formed. This river is of considerable size, extending inland to the northward, and it has been sometimes mistaken for Aracan River. There is a passage of $4\frac{1}{2}$, 5, and 6 fathoms, betwixt the Oyster Island Reefs and the bank that fronts the mouth of Miou River, and which extends along the coast to the bar of Aracan River. This bank has breakers on it in some parts, and should not be approached even in the N. E. monsoon, under $6\frac{1}{2}$ or 7 fathoms.

Oyster Island and Reef.

Miou River.

ARACAN RIVER, Mosque Point, or Bhudder Mokham, in lat. 20° 7′ N., lon. 92° 55′ E., forming the northern boundary of the entrance of this river, is low, and has some rocks near it called the Fakiers, covered at high water. The channel into Aracan River is betwixt the Fakiers and the small islets, called the Savages, situated near the N.W. point of Borongo, which is the westernmost of the Broken Islands. There are $3\frac{1}{2}$ and 4 fathoms on the bar about 3 miles to the S.W. of Mosque Point, and 2 miles off the shore of Borongo; and the depths are from 8 to 10 fathoms along the western coast of this island, at $2\frac{1}{2}$ and 3 miles' distance. When approaching the river from the westward, so long as you keep the Small Table Land on Borongo bearing East, or to the northward of that point, you will not get into shoal water on the bar. The best crossing place is with the Great Savage bearing from N. by E. to N. E. by N., where the depths at low water spring tides will be 18 feet. The best track in, after passing the bar, is to bring the S.E. point of Flat Island in a line N. E. by N. with a white Pagoda, situated on a hill about a mile inland of the eastern shore, taking care, when abreast of Passage Rock, to shut in the Pagoda, in order to be certain of clearing the Three Fathom Patch, lying a sixth of a mile N.W. of the rock, which has irregular depths from 14 to 19 fathoms water near its northern side, and 8 and 9 fathoms near to the Fakiers on the N.W. side of the channel. When inside of Passage Rock, the fair track up Aracan River is first N. E. $\frac{1}{4}$ N. about 6 miles, till near the S. E. point of Flat Island, keeping along the edge of the Great Bank that extends S.W. from the Island, which is the best side of the channel. When near the S. E. point, and the eastern passage is open, keep mid-channel on a North, and then a N. by E. course, as far as Rocky Point, which is about 3 miles beyond the N. E. end of Flat Island; it will then be necessary to keep the western shore on board, in order to avoid the White Rock which lies nearly in mid-channel about a mile beyond the point. The course is then N. N. E. to the Oriatung Pagoda, about 2 miles beyond which the river divides itself into two branches. The soundings in this track are rather irregular, usually from 4 to 8 or 9 fathoms.

Aracan River.

A ship proceeding for this river in the S.W. monsoon should endeavour to make the

south end of Borongo Island, which will carry her clear of Oyster Reef, then keep about 4 or 5 miles off the shore of Borongo in running to the northward, until Passage Rock in the river's mouth is seen, and steer for it. Captain Warden, who furnished these remarks, says there is only $2\frac{3}{4}$* fathoms on the bar at low water spring tides, the rise and fall being then from 10 to 12 feet; therefore, any ship drawing above 15 feet water ought not to venture over it, except with a flowing tide.

A ship intending to enter the river in the N. E. monsoon should pass to the northward of the Oyster Island, taking care to preserve a proper distance from the sand that stretches from Mosque Point along the coast, upon which the sea usually breaks. But ships intending to anchor at the village of Akyab, after being a mile inside of Passage Rock, should steer to the northward, when Mosque Point bears N.W., then haul in near the coast at the White Tomb, for the anchorage of Akyab, in 4 or $3\frac{1}{2}$ fathoms at low water, and about $1\frac{3}{4}$ miles N. $\frac{1}{4}$ E. from Mosque Point. The anchorage inside the point is off the village Akyab, the flagstaff of which is in lat. 20° $8\frac{1}{4}'$ N.

Tides. It is high water at the anchorage off Akyab at 9 hours 45 minutes on full and change of moon, and the greatest rise in February was 9 feet. Velocity of tide in the river from 3 to $3\frac{1}{2}$ miles per hour on the springs, and from $1\frac{1}{2}$ to 2 miles on the neaps.

Broken Islands. THE BROKEN ISLANDS, called in Captain Ross's survey, Western, Middle, and Eastern Borongo, are three long and narrow islands immediately to the southward of Aracan River, extending about 5 leagues N. N.W. and S. S. E., parallel and near to each other; Borongo or Bolongo, the westernmost, has a reef projecting from its south point, and there is a reef and several small islands off the south point of the centre island.

Between these two there is good anchorage in 8 or 10 fathoms mud, or in 5 fathoms farther up the strait, where ships might be sheltered from all winds but those that blow from the South. This has been named Research Strait, and has only 2 and $1\frac{1}{2}$ fathoms at its northern part, consequently will not admit of ships passing through into Aracan River.† These islands are mountainous, woody and rugged, without any appearance of inhabitants or cultivation; and the whole of the coast of Aracan, both to the northward and southward of them, has a similar appearance, presenting a most dreary aspect when viewed from sea.

The south ends of the Broken Islands, although bounded by rugged black rocks, are not very dangerous, as most of these are visible and do not extend far out.

About 4 leagues to the westward of the Western Borongo, and parallel to it, there is a long sand-bank, with 9 fathoms water on it in some parts, and 16 or 17 fathoms between it and the island; and 3 leagues due South from its south point, there is a patch of $7\frac{1}{2}$ fathoms in lat. 19° 40′ N., with 22 and 20 fathoms between it and the South Rocks, which are distant 10 miles E. by N. from it, and 6 miles S. S. E. from the south point of the Middle Bolongo Island, united to that island by a ridge of rocks and islets.

Terribles. THE TERRIBLES, in lat. 19° 22′ to 19° 27′ N., distant from the shore 10 miles, form three visible groups of rocks extending in a N. N. E. and S. S.W. direction, some of

* The late correct survey of Captain Ross places 3 fathoms on the bar at low water at the deepest crossing track, which is on the eastern side towards Borongo.

† In the Admiralty chart, from the survey of Captain Laws, R. N., there appears to be a channel between the Middle and Eastern Borongo, but having less water than the former. In this chart the western island alone bears the name of Borongo, the centre one being called Bentinck, and the eastern one Lushington Island.

them about 14 feet above water, with others under water not yet explored. The northernmost rock is the largest, from which a spit is said to project to the N.W. some distance, with 20 fathoms close to it on both sides. The middle group is about a mile S.S.W. from the northernmost rock. The southernmost group, consisting of several low rocks, is 4½ miles S. S.W. ¼ W. from the northernmost, and breakers have been seen one mile to the South of it. Breakers have been also seen 2 miles West, and half a mile North from the northernmost rock, which shews there are sunken dangers around, and that ships should not come within 2½ miles of the dry rocks.

The northernmost rock is in lat. 19° 27′ N., lon. 93° 20′ E., bearing S. E. ¼ S. from the south point of the western Bolongo, distant 28 miles, and W. by S. distant 11 miles from the Pagoda Rock, in Kyouk Phyoo Harbour.

When coming from the westward, the high peak in Combermere Bay is discernible at 8 or 9 leagues' distance in favourable weather, and it is in a transit line with the northernmost rock of the Terribles, bearing *true* N. 49° E., or N. E. ½ E. magnetic bearing.

From the N.W. point of Cheduba, the south group is about 11 leagues' distance, bearing N. N. W.; near to it on the west side there are 20 fathoms water, and the depths increase regularly to 100 fathoms no ground, about 6½ leagues to the westward. Ships passing along this coast ought not to approach the Terribles in the night, under 28 or 30 fathoms; and in crossing the entrance of Aracan River, they should not borrow toward Oyster Island, or the outermost Broken Island, to less than 20 or 22 fathoms. Directions.

There is an inside passage, with 10 to 15 fathoms water, between the Terribles and the shoals fronting Saddle Island and Cap Islet, which are situated near the shore, off the N.W. point of Ramree, and which form the south side of the entrance to Kyouk Phyoo Harbour; but this passage requires caution, as the Irrawaddy Shoal lies 4 miles West from Saddle Island, and 4½ miles E. by S. from the northernmost rock of the Terribles, being nearly in the middle of the fairway, with only 2 fathoms water on it, and shews breakers when there is much swell. The passage between this danger and the Terribles is, however, 3½ miles wide, with from 12 to 15 fathoms water, and may be occasionally used in favourable weather, by keeping in mid-channel; but between the Irrawaddy Shoal and the reef surrounding Saddle Island a ship ought not to attempt a passage, that part not having been sufficiently explored.

KYOUK PHYOO HARBOUR (Fort Dalhousie), in lat. 19° 26′ N., lon. 93° 34′ E., or 5° 13′ E. of Calcutta, lies directly to the eastward of the Terribles, inside the north point of Ramree Island. This point, called Flagstaff or Sandy Point, is about 6 miles east of the north end of Saddle Island, which lies on the south side the entrance of the channel, having reefs projecting 1½ miles from its north point. The channel is bounded on the north side by reefs, some of which are detached, and others extend from the islands on that side, which require great caution in passing. Captain Bowman constructed a plan of the channel and harbour, accompanied with the following directions.* Kyouk Phyoo Harbour.

In steering for the north end of Saddle Island, which is in lat. 19° 26′ N., it should not be approached under 2 or 2½ miles, and when it bears South, Pagoda Rock should

* The harbour and dangers proximate to Kyouk Phyoo have now been surveyed by Captain Ross, the Company's Marine Surveyor, which are engraved and sold by Messrs. Allen and Co., No. 7, Leadenhall Street; and will be found valuable for ships visiting the coast of Aracan

be brought to bear E. by N. ½ N; this rock is conspicuous, being white-washed, and lies 4½ miles to the N. E. of Saddle Island; the fair channel course is then E. by S. ¼ S.; and in sailing to, or from the harbour, Sandy Point should not be brought more to the eastward than E. S. E., to avoid a reef projecting nearly a mile from Ramree, nor more to the southward than S. E. by E., to avoid a shoal, distant three-quarters of a mile to the northward of the point of the above reef, as the breadth of the channel between these dangers is little more than half a mile: they lie two miles to the westward of Sandy Point, and half a mile off this point lies the Reliance Rock, with a buoy on it, between which and Quoin Island, the channel is a mile wide, the south point of the island having a reef close to it, which bounds the channel on the north side of the harbour to the eastward of the shoals described. Buoys are now placed on all these detached shoals, which bound the entrance of this fine harbour. The soundings to the northward of Saddle Island reefs are from 15 to 7 fathoms, deepening to 20 fathoms farther to the eastward, and in the narrow part, between the dangers mentioned above, they are irregular from 9 to 26 fathoms, continuing the same until near Sandy Point, where the depths decrease to 7 or 8 fathoms, at the anchorage off the village of Kyouk Phyoo.

Fletcher Hayes Straits.

About 2½ or 3 miles to the E. S. E. of Kyouk Phyoo, Fletcher Hayes Straits begin to stretch to the S. Eastward, separating Ramree from other islands, and from the continent. These straits, in some parts, branch out into an extensive inland navigation, completely land-locked, with good depths of water, and interspersed with many beautiful islands.

About 5½ or 6 miles south, a little easterly from Saddle Island, and 1½ miles from the Ramree shore, there is a rock, called Research Rock; and there are also several other straggling rocks contiguous to the western coast of that island, but not so far out as the former; a little to the southward of the Research Rock, the soundings along the west coast of Ramree are tolerably regular, and ships may approach to 9 or 10 fathoms, about 4 or 5 miles off shore.

Cheduba Island.

CHEDUBA is a moderately high island, extending from lat. 18° 40′ to 18° 56′ N., its extreme width being about 15 miles. It is bounded by reefs and islets, which project several miles to seaward, and which ought therefore to be approached with great caution in the night. The outermost rocks, projecting about 4½ miles from the N.W. end of the island, are in lat. 18° 57′ N., lon. 93° 26′ E., and are part of a reef composed of rocks and sand banks, above and under water; but about 3 miles East of these, there is an islet, called Tree Rock, having on it a single tall tree, that may be seen a considerable distance.

Northern passage into Cheduba Road.

Ships coming in from the westward on the north side of Cheduba ought not to approach the reef under 11 or 12 fathoms water, for near it the bottom is mostly rocky, and the soundings not very regular. Being within the reef, the water shoals gradually to 7, 6, and 5½ fathoms, and the course should not be more to the southward than E. by S. until well over to the Ramree shore, where the soundings are more regular than on the Cheduba side, which is very flat and shoal to a considerable distance. By steering along the eastern or Ramree side at 2 to 1½ miles' distance, there will seldom be less than 5 fathoms, and when to the southward of *Rocky Point Bay*, having brought a remarkable hummock or conical mount to bear E. by N., or more northerly, the water will deepen to 6 or 7 fathoms. Between the Ramree shore and Cheduba, about 5 miles to the north of the anchorage, and about 1¼ miles from a point of Ramree, there is a dangerous patch of rocks, with only 10 or 11 feet water upon them; and 1½ miles to the westward of this patch lies another of 2½ fathoms, with 6 fathoms close to them. These dangers require great care, as they lie in the fair channel, bearing about E. ½ N.

from the north point of Cheduba, and north a little westerly from its N. E. point, and opposite to a point on the Ramree shore, on which stands a bungalow. A ship in passing these dangers should keep within $1\frac{1}{2}$ miles of the Ramree shore on the edge of the Mud Bank, and when the north point of Cheduba bears W. by S., a moderate high and round island will be seen bearing about S. by E. $\frac{1}{4}$ E., and by steering for it, when past the dangerous rocky patch mentioned above, she will shoal gradually over to the west, towards the town of Cheduba, where she may anchor in 4 or $4\frac{1}{2}$ fathoms, with Round Island bearing S. by E., and the town Pagoda W. $\frac{3}{4}$ S. This pagoda has on its top a brazen image of a large bird, resembling a goose, and is situated in lat. 18° 51′ N., lon. 93° 44′ E. Captain Ross, the Company's Marine Surveyor, made the anchorage 1° 59′ East from Chittagong by good chronometers, which, by his late survey, places the Pagoda in lon. 93° 45′ E. In the road, the tide rises from 6 to 10 feet; high water about $11\frac{1}{2}$ hours at full and change of moon.

Anchorage. *Position of the town Pagoda.* *Tides.*

Ships may fill water at half ebb in their own boats, but it will be procured more expeditiously by the country boats. The landing-place is near a small wooden bridge, at a wharf about 2 miles up the river on the starboard side, where is a bazar well supplied with poultry, hogs, goats, fruits, and vegetables in abundance, at reasonable prices, and of excellent quality. From the entrance of the river, mud flats stretch $1\frac{1}{2}$ miles out, making the approach difficult to a stranger; but inside, although narrow and winding, there is water sufficient for large boats at all times of tide.

Supplies.

RAMREE, or YAMBIE MEW ISLAND, forming the N. E. side of Cheduba Strait, is of moderate height near the sea, and extends to the N. Westward to Saddle Island, in lat. 19° 26′ N., on the north side of which is the entrance to Kyouk Phyoo Harbour already described. The arm of the sea, which stretches inland to the eastward, and uniting with the other branch that proceeds from Ramree Harbour, has been named Fletcher Hayes Straits, separating Ramree from the other land, and giving it the character of an island. The south point of Ramree, off which are several islands, lies directly East from Cheduba anchorage; betwixt this point and the nearest island there is a passage, with from 3 to 7 and 10 fathoms, leading into the large space called Ramree Harbour; another passage leading into it, from the southward, is along the eastern side of the chain of islands that projects from the south point of Ramree in a S. by E. direction. The largest, and nearest to the point, is named Amherst Island, or Juggoo; the next, Adam Island; the third, Still Island; and the two southernmost, Wyndham and Harrison Islands, which are small. These islands are lined by rocks and shoal water, and an extensive shoal projects from the eastern shore also nearly over to the islands, greatly contracting the channel, and rendering it unsafe to the east of Amherst Island; the depths in it are generally irregular, from 7 to 4 or $3\frac{1}{2}$ fathoms: but the best passage is between the north end of Amherst Island and Ramree Point, and when inside of this point the depths increase; but there are several shoals, with good passages between them, in this inlet, which is $3\frac{1}{2}$ and 4 miles in breadth, extending about 5 leagues in a northerly direction, where it branches into several rivers, one leading to Aracan, and that on the western side forms Hastings or Amherst Harbour, which has depths of $3\frac{1}{2}$ to 4 fathoms water, and is safe.

Ramree Island and Harbour.

Although a brisk southerly wind, with a northerly current, is sometimes experienced on the coasts of Aracan and Ava in the N. E. monsoon, the prevailing winds are from W. N.W. and N.W. in the day, and from northward in the night, seldom veering to N. E. It may therefore be preferable for a ship leaving Cheduba Road or Ramree Harbour to proceed to sea by the southern channel when the northerly winds prevail,

Winds in the N.E. monsoon.

and not lose time beating to the northward round the reef off the north end of Cheduba.

South Channel. The southern channel is formed by the Cheduba Flat, Round Island, and Flat Island, to the westward, and the Ramree Chain to the eastward, and is continued in a S.W. direction to the South of Tree Island, which is situated in lat. 18° 26′ N., lon. 93° 56′ E., about 6 leagues S. E. by S. from the south end of Cheduba, being the southernmost island among the detached groups of reefs and banks that stretch from the latter, in a S. E. direction. Tree Island* is of a circular form, about 1 mile in diameter, with a small hill near the middle of it covered with trees; one of these is conspicuous, being higher than the others: it is dangerous to approach, being surrounded by straggling rocks, which extend in a S. E., northerly, and N.W. direction, to the distance of four miles.

Tree Island.

From Cheduba Road to the southward. Between Tree Island and those off the S. E. end of Cheduba, no safe passage to seaward was known till H. M. sloop Trincomalee, with the Sybille frigate in company, left Cheduba Road, December 15th, 1801, and proceeded between Round Island and the islands to the eastward, leaving Flat Island and the contiguous rocks near Cheduba to the northward, and False Island and Tree Island, with the rocks and breakers near them, to the southward. After weighing from Cheduba Road, these ships steered to give a good berth to the shoal which extends from Round Island to the northward, and had regular soundings mostly from 5 to 6½ fathoms in passing between the Ramree Chain and Round Island, until opposite to Flat Island;† the bottom then became uneven, composed of coarse sand and coral; there was, however, never less than 5 fathoms in passing between it and the straggling dry rocks that stretch from False Island to the southward, which may be approached pretty close in coming out by this channel.

The passage last described is the *shortest* route to seaward from Cheduba Road by the south channel; but ships intending to anchor in Sandoway Road should steer from Cheduba anchorage about S. S. E. ½ E., keeping nearer than mid-channel, towards the Cheduba side, to avoid the extensive shoal bank that stretches from Ramree Point to the westward rather more than mid-channel towards the Cheduba, and on which the depths are from 3 to 2½ fathoms, even ground: when Round Island is brought to bear S. S.W. or S.W. by S., about 3 or 3½ miles' distance, you are clear of the bank, and should then steer about S. E. for Sandoway Road in the wide channel, bounded on the west side by False Island and Tree Island Reefs, and on the east by the Osprey, Gunga Saugor, and other rocks. There are several peaked hills 2½ or 3 leagues inland to the northward of Sandoway River; but Sandoway Peak is close to the sea, about 2½ miles S. E. from the isle and reef that bar the river's mouth, which peak bears E. S. E. from Round Island, and is an excellent mark when visible, as the transit bearing of these objects leads clear through the channel, but near to the south end of Gunga Saugor Rocks, which lie 4 miles west of the anchorage: it is therefore right, after being 2½ or 3 leagues to the E. S. E. of Round Island, to keep a little outside of the direct or transit line of Round Island and Sandoway Peak, until past Gunga Saugor Rocks, then haul in East or E. by N. for the anchorage to the N.W. of the isle and reef that front the mouth of Sandoway River. In coming from Cheduba Road by this channel, if a ship do not intend to touch at Sandoway, when the peak of this name is brought to bear N. E. by E. she will be clear of the Nerbuddah Rocks, which lie 4½ miles E. S. E. from

* This Island is said to be named Negamale by the Burmese, and has a pool or two of fresh water.

† Reguain is the native name of this Island; it is 4 miles in length North and South, has a central hill, and lies from 4 to 6 miles off the S. E. part of Cheduba, and S. by W. from Round Island.

Tree Island, and may then steer out S.W. to seaward, in the channel between Foul Island and these dangers.

To the S. E. of Tree Island, at the distance of 6 leagues, there is a rocky bank of coral, with only $4\frac{1}{4}$ fathoms water on it in some parts, from which Foul Island, hereafter described, bears South about 2 leagues. On either side this bank, between it and the island last mentioned, or between it and Tree Island, there are safe channels leading from the south entrance of Cheduba Strait to seaward. In the north channel, least water 12 fathoms, with Tree Island bearing N. N.W. $\frac{3}{4}$ W., distant 7 or 8 miles. The channel to the south of the coral bank is not so safe, being contracted by a shoal on which the sea breaks, called Brougham Shoal, bearing N. N. E. from Foul Island, distant 4 miles. Coral Bank.

SANDOWAY ROAD, in lat. 18° 35′ N., lon. 94° 13′ E., formed inside the reefs at the mouth of the river of this name, has anchorage from 6 to 5 fathoms; and Sandoway Town, which lies about 8 miles up the river in a S. E. direction, is a place of some consequence. The channels between the reefs leading to the road require care from strangers; there is one from the southward and another from the northward, exclusive of that between Tree Island and Foul Island, mentioned above. About 2 leagues North from Sandoway Road, there is a town and pagoda near the shore, opposite to which lie the Osprey and Gunga Saugor Reefs, 5 miles off shore, having soundings of 4 to 7 fathoms between them, and near the coast from thence to Sandoway Road. Sandoway.

COAST OF AVA AND ADJACENT ISLANDS.

On the mainland to the S. Eastward of Ramree a triple ridge of regular sloping mountains divides the coasts of Aracan and Ava; the latter coast extends in a southerly direction from thence to Cape Negrais, forming several bays, not affording safe shelter for large ships, and having some groups of islets and dangers in its vicinity. Coast of Ava.

FOUL ISLAND, already mentioned, in lat. 18° 4′ N., bears from Tree Island nearly S. S. E. $\frac{3}{4}$ E., distant 8 leagues, and from the continent abreast about 6 leagues, bearing W. by N. from a point called Bluff Cape. Foul Island may be seen 8 leagues distant, and is 2 miles long, of conical form, with a gradual declivity from the centre towards the sea, the north end terminating in a low point, with a remarkable tree on it, and the whole of the island is covered with trees. A reef of rocks extends about 3 miles South from the island, and to the N. Eastward of it there are islets and rocks near the shore, with a reef partly above water, stretching southward from the outer or southernmost of these islets above 1 or $1\frac{1}{2}$ miles. Abreast this reef, the depth at 2 or 3 miles' distance is 20 fathoms; when to the northward of it, the shore may be approached to 16 fathoms in coming from the South along the coast towards Cheduba Strait. The soundings between Foul Island and the main are generally from 20 to 30 fathoms; within 3 miles of Bluff Cape there are 21 fathoms, the bottom mostly mud, although in some parts it is hard sand, about 3 leagues off shore. About 3 and 4 leagues South from Foul Island the depths are from 38 to 46 fathoms, and to the westward of it, at a few miles' distance, they soon increase to 55 and 60 fathoms, and a little farther out there is no ground. Ships passing outside this island in the night should not come under 36 or 40 fathoms, nor under the same depths in passing outside Cheduba and the bank and islands projecting from it to the southward; for Foul Island.

about 4 or 5 leagues westward of that island the bank has a sudden declivity from 60 or 70 fathoms to no ground.

Vestal Shoal. VESTAL SHOAL,* in lat. 18° 1′ N. by Captain Ross's survey, is small, with heavy rollers over it at times, and it bears about W. by N., distant 4 leagues from Bluff Cape, and 7 miles E. S. E. from the centre of Foul Island, having 30 to 33 fathoms near it on the outside, and the same depth of water between it and William Shoal.

WILLIAM SHOAL has 3 fathoms water on it, with occasional rollers, and bears West $6\frac{1}{2}$ miles from Bluff Cape, and about the same distance E. S. E. from Vestal Shoal.

Close to William Shoal the depths are 24 and 23 fathoms, decreasing inside to 15 fathoms within a mile of Bluff Cape, which cape has a reef around it to one-third of a mile distance, and a bay on its north side, at the bottom of which there appears the entrance of a river. A ship passing inside of William Shoal ought not to deepen above 20 fathoms towards it, nor approach Bluff Cape under 16 fathoms.

Satellite Rock. SATELLITE ROCK, in lat. 18° 4′ N., bears N. $\frac{1}{2}$ W. from William Shoal 6 miles, the same distance from the nearest shore, and 11 miles E. $\frac{1}{2}$ N. from Foul Island. It would be imprudent to go inside this danger, but there are safe passages between it and the shoals last mentioned.

In lat. 17° 48′ N. there is a mountain, and $3\frac{1}{2}$ miles to the South of it a Quoin Hill, both near the coast, which in this part has several reefs and isles projecting 1 and 2 miles from it, and the outer extremity of the reef that surrounds Rocky Islet in lat. 17° 43′ N. is nearly 3 miles distant from the nearest shore, and there is a 6 fathoms rocky patch 1 mile W. $\frac{1}{2}$ S. from the outer verge of the reef. The depths near this patch on the outside are 23 and 24 fathoms, and inside, close to the reefs and isles, from 10 to 5 fathoms.

Gwa Island. GWA or GOA ISLAND, in lat. 17° 33′ N., lon. 94° 34′ E., lies $1\frac{1}{2}$ miles from the shore, and is of middling height, having a coral bank extending about 3 miles to the westward of it, with irregular soundings from 18 to 8 fathoms, 22 on the outer edge, and 30 to 33 fathoms at a small distance from the verge of the bank. To the N. E. of Gwa Island there is a harbour for small vessels, at the south part of which is the entrance of the small river, and Gwa Town, built with bamboes and mats, with a cultivated country around.

Between Gwa Island and Broken Point, opposite to the Calventuras, there are several indentations in the coast fronted by reefs.

St. John, or Church Rocks. ST. JOHN, or CHURCH ROCKS, in lat. 17° 28′ N., lon. 94° 23′ E., by Captain Crawford's survey, bear from Gwa Island S. W. by W., distant $12\frac{1}{4}$ miles, and from the shore 4 leagues; they are four in number, one of them large and about 16 feet high, the other three small and lie near each other; when they bear about S.W. the large one resembles a country church with a square tower on its west end, from which they have been named. Very near these rocks there are 20 fathoms water, and a little distance inside, the depths are 35 and 36 fathoms soft ground, decreasing pretty regularly towards the shore; but the latter should not be approached under 22

* The names of Vestal and William Shoals are reversed, both in Lieutenant Crawford's and in the Admiralty charts.

fathoms, if working between it and Church Rocks in the night, nor should the depth be increased above 34 fathoms towards these rocks. The coast between Foul Island and Church Rocks may, *in some places*, be borrowed on to 15 or 16 fathoms in working, which will be about 2 miles off shore; the depths from 2 to 4 leagues off are 26 to 40 fathoms, increasing fast to the westward of Church Rocks to no ground; therefore, a ship passing outside of them in the night should keep in deep water, not under 56 or 60 fathoms. Coast betwixt them and Foul Island.

There is a hill called Round Hill in lat. 17° 14½′ N., and another called Peak Hill in lat. 17° 10′ N., from the latter of which the land projects 1½ miles in a point to the northward, and sandy isles, surrounded by a reef of rocks, stretch 1½ miles to the westward of that point, having shoal soundings of 5 and 6 fathoms rocky ground, extending 1½ miles farther.

CALVENTURA ROCKS bear from Church Rocks S. ¼ W., distant about 11 or 12 leagues; they form two divisions, bearing from each other N.W. and S. E., distant 5 or 6 miles, the body of them being in lat. 16° 53′ N. The N.W. group consist of seven black rocks, in lat. 16° 55′ N., lon. 94° 15½′ E., of different magnitudes and forms; one of them resembles an old church with a mutilated spire, another is much larger at the top than it is near the small base on which it stands. The S. Easternmost division consists of two high rocky islands, covered with trees and bushes, connected by a reef of rocks, with 5 to 7 fathoms water upon it, having also a single rock dry at low water, about half-way between the islands. Between the Calventura Rocks and Broken Point on the main there is a safe channel, about 4½ miles wide, with 20 and 22 fathoms soft ground in mid-channel, and 15 or 16 fathoms hard sand towards the rocks or the shore; about a quarter of a mile inside the easternmost rock there are 6 and 8 fathoms water. These two rocky isles bear nearly North and South from each other, distance 2½ miles. Calventura Rocks.

From Broken Point, abreast the Calventuras, a reef extends to the N.W. about a mile, with a rock on its outer edge dry at low water; and to N. E. of the point the coast forms a bight, with a small river, fronted by a high island, and contiguous reefs. About 4 miles to the northward of Broken Point, and 1½ miles off shore, there is a Sandy Island with trees on it, and 1¼ miles to the N.W. of the latter, a remarkable Brown rock, which is surrounded by a reef. In passing along the coast from the Church Rocks to the southward, a ship may keep between 35 and 23 fathoms, and in the latter depth she will be about 4 miles off shore; passing betwixt the Calventuras and the main, she should not, in turning, borrow nearer to Sandy Island and Broken Point than 13 fathoms, which is usually about 2 or 2½ miles from the shore, and the Brown Rock Reef should not be approached under 16 fathoms; neither should the coast be borrowed on under this depth to the East and S. Eastward of the South Calventuras, as some islets and reefs lie 1½ miles off shore, where the water shoals on the verge of some of them, from 15 soft to 8 fathoms hard at a cast. Coast near Broken Point. Directions.

Ships which pass outside the Calventura Rocks ought to keep on the edge of soundings, and with great caution not to come under 50 or 60 fathoms in the night, which will be but a small distance from the outermost rocks, there being 44 and 46 fathoms when they bear East about 1½ miles.

The coast from Broken Point, opposite the Calventura Rocks, to Round Cape, in lat. 16° 16′ N., a little to the southward of the Buffalo Rocks, extends S. by W. and S.S.W., having some projections and indentations with several islets and reefs, at the distance of from 1 to 2 and 3 miles in some places, the outermost of which are the fol- Coast and dangers from Broken Point to Round Cape.

lowing: a bank of rocky bottom, with 6 fathoms on it, in lat. 16° 43′ N., about 3 miles off shore, with depths of 15 and 14 fathoms near it, and 12 or 11 fathoms inside, between it and the main. Mill-stone Rock, above water, in lat. 16° 40′ N., about 3 miles off shore, in the stream of 15 fathoms, having several reefs 2 miles to the southward, and a high isle nearly 3 miles S. by E. from the rock. Coronge Island, in lat. 16° 32′ N., is high, about 2 miles in length North and South, situated contiguous to a rocky point of the coast, which forms a large bay to the N. E., having some rocks and islets in it, with soundings of 5 to 7 fathoms. Crawford Shoal, in lat. 16° 29′ N., distant $3\frac{3}{4}$ miles W. $\frac{1}{2}$ N. from Conical Cape, and 3 miles S.W. from the south end of Coronge Island, is partly dry at low water spring tides, having 16 fathoms close to it on the outside, and 12 or 11 fathoms about a mile inside; but Conical Cape must be avoided, as breakers and a White Rock front it, at three-quarters and half a mile distance.

Lychune Islands.

LYCHUNE ISLANDS, in lat. 16° 23′ N., two in number, lie near each other, and $1\frac{1}{2}$ miles off shore, the innermost being called Oong-chune; reefs and rocky islets extend 2 miles to the northward of them, and the adjacent coast is lined with rocks or reefs. The depths near the outer reefs and islands are 9 and 10 fathoms irregular, with 5, 6, and 7 fathoms, in some of the passages between the islands or reefs.

Saingbain Kieu, or Buffalo Rocks.

SAINGBAIN KIEU, or BUFFALO ROCKS, in lat. 16° 19′ to 16° $22\frac{1}{2}$′ N., lon. 94° 12′ E., bear nearly S. $\frac{1}{4}$ W. from the outermost Calventura Rocks, distant 10 or 11 leagues; they are a group of detached rugged rocks, extending nearly North and South about $3\frac{1}{2}$ miles, situated about 3 miles from the shore, and bearing North from the western extremity of Cape Negrais. The North Buffalo is a little more than half a mile to the S.W. of the outer Lychune Island, and about mid-way betwixt it and the South Buffalos, Perforated Rock and Pillar Rock are situated; the sounding betwixt these rocks and the North or South Buffalo are from 9 to 12 fathoms, and nearly the same depths continue to the edge of the shoal bank, about a mile inside the Southern Buffalos, which shoal bank extends along the coast about the distance of $1\frac{1}{2}$ miles from the shore, having on it several dangers and rocks above water. At Round Cape, in lat. 16° $15\frac{1}{2}$′ N., the coast is more safe to approach, and continues so to the Brother Hills in lat. 16° 8′ N., excepting that a rock called Black Rock, in lat. 16° 11′ N., lies above water $2\frac{1}{2}$ or 3 miles off shore, having 9 and 10 fathoms water close to it on the inside.

On the West side of the Buffalo Rocks the soundings are regular, 20 fathoms about a mile from them, and 50 or 60 fathoms at 5 leagues' distance; but they should not, without great caution, be approached in the night, nor should the coast between the Calventura Rocks and the Buffalo Rocks be borrowed on under 20 fathoms in most places, excepting during fine weather in the daytime.

Cape Negrais.

CAPE NEGRAIS, in lat. 16° 2′ N., lon. 94° 13′ E., by chronometers and lunar observations, is the south-westernmost land of the coast of Ava, but the southernmost extremity of that coast is generally called THAY-GIN or PAGODA POINT, from a pagoda standing upon it, in lat. 15° $56\frac{1}{2}$′ N., bearing nearly S. E. by S. from the former, distant $5\frac{1}{2}$ or 6 miles. Very near the point there is a large rock, and red cliffs stretch from it towards Cape Negrais, which are fronted by a reef, extending a considerable way out; this reef terminates at the north end of the red cliffs near Cape Negrais, and should not be approached under 8 or 9 fathoms in a large ship. To the northward of the red cliffs the shore is more bold, there being from 11 to 12 fathoms soft

ground within 2 or 3 miles of the Cape; but between the latter and the Brother Hills, straggling rocks or reefs project 1½ miles from the shore, which should not be approached under 11 or 10 fathoms.

NEGRAIS RIVER, called also Persaim and Basseen River, formed between Pagoda Point to the westward and Point Porian to the S. Eastward, is navigable a great way inland: there are two channels that lead into it, one on each side of Negrais Island, and the western channel forms a good harbour betwixt that island and the west side of the river. The eastern channel is not so safe, for an extensive reef projects from the land about Point Porian nearly to Diamond Island, and a reef projects also from Negrais Island a great way to the S. West, which, with other detached shoal banks, nearly join the extremity of the former reef and Diamond Island. This river has generally been a place of resort for trading vessels from Coringa and other parts of the Coromandel coast.* Negrais River.

Hin-gie, or Negrais Island, situated in the entrance of the river, about 4 or 5 miles inside Pagoda Point and nearest to the western shore, is conspicuous by a hill on it, which is the easternmost high land on the coast; Point Porian, on the south-east side the river's mouth, being the first low land, formed of white cliffs, and covered with trees. Hin-gie or Negrais Island.

A ship intending to anchor under Pagoda Point should bring it to bear N. E. ½ N. or N. E. by N., then steer for it; some hard casts of 6, or perhaps 5 fathoms, may be got on the tail of the sand that extends from Negrais Island, and when the Point bears from N. to N.W. about 1½ miles, she may anchor in 6 or 6½ fathoms mud. A ship going in for the harbour or channel between the island and western shore should round Pagoda Point at the distance of half a mile in 6 or 6½ fathoms, but a little inside the point the channel becomes more contracted. To sail into the entrance of Negrais River.

The whole of the coast of Ava, from the extremity of the Aracan Mountains near Cheduba to Cape Negrais, is a continued ridge of craggy land, tolerably high, broken into cliffs of reddish earth in many places, and generally with low trees or brush-wood upon it, without any signs of cultivation or inhabitants towards the sea. General description of the coast.

LYCHUNE, or DIAMOND ISLAND, in lat. 15° 52′ or 51½′ N., lon. 94° 19′ E., by chronometers from Madras and lunar observations, and in lon. 94° 15½′ E. by Captain Ross, bears nearly S. by E. from Pagoda Point, distant 5½ or 6 miles, and fronting the entrance of Negrais River; it is low, covered with trees, about 1½ miles in extent, and may be seen about 5 leagues; but it should not be approached in a large vessel without great caution, on account of the reefs that surround it.† Diamond Island.

ALGUADA REEF, called also Sunken or Drowned Island, bears from Diamond Island S. S. W. about 3½ leagues, the southern extremity of it being in lat. 15° 41′ N.; it is a very dangerous reef of rocks, level with the surface of the sea, extending N. E. and S.W. about 2 miles, and it is very narrow; but there are detached rocks at a considerable distance from it, on some of which the sea breaks in bad weather. Alguada Reef, or Sunken Island.

* When Captain Pope was here in 1788, there were five ships under English colours in the river. He came from Rangoon River in a boat to Ava River, by an inland navigation like the Sunderbunds in Bengal.

† At some seasons it is much frequented by turtle, but it is considered unhealthy and dangerous for people to sleep on shore, for His Majesty's ship Sybille lost several of her men who remained on shore during the night; those who were on the island in the daytime, and returned on board in the evening, escaped the fever that speedily terminated the lives of the former.

Passage between Alguada Reef and Diamond Island.

The passage between Diamond Island and Alguada Reef is certainly very dangerous, and ought not to be adopted in any ship, except in a case of *great* necessity. Some ships have passed through it in former times, but the exact limits of the reefs on each side, and the true situations of other detached *sunken* rocks, are very imperfectly known; consequently this channel is unsafe. Several ships have struck upon these sunken rocks, one of which was his Majesty's ship Exeter, in November, 1748; and the Company's ship Travers, bound to Bengal, was totally lost at 5 A.M., November 7th, 1808, on a rock said to bear N. N. E. from Alguada Reef, distant about one mile; probably the same on which the Exeter struck. Ships which have passed between Diamond Island and Alguada Reef have generally endeavoured to keep in 9 or 10 fathoms water, about 3 or $2\frac{1}{2}$ miles from the former, as reefs project from it about $1\frac{1}{2}$ or 2 miles to the southward and S. Westward; but the greatest dangers are nearly mid-way between the islands, for a sunken rock is thought to lie about 3 or 4 miles nearly S. by E. from Diamond Island, another about the same distance S. S.W. from it, nearly in a direct line towards Alguada Reef, and another to the S. Westward of it, about 2 leagues' distance.

Phæton Shoal.

PHÆTON SHOAL, on which his Majesty's ship Phæton struck, February 16th, 1810, obliging her to go to Bengal to repair, bears S.W. by S. from Diamond Island, distant 4 miles, and N. by E. 5 miles from Alguada Reef, having 9 fathoms water close to, 9 feet water upon it, and is of small extent.

Tides.

Channel outside of Alguada Reef.

Exclusive of these dangers, the bottom is chiefly uneven and rocky betwixt Diamond Island and Alguada Reef, with a heavy turbulent swell, occasioned by the sea beating upon the reefs, and the strong tides, which here set the flood to the E. S. E. and the ebb to the W. N. W. The rise of tide is about 9 or 10 feet on the springs, high water about $10\frac{1}{2}$ hours on full and change of the moon, in the entrance of the river. From the heavy, confused swell that generally prevails in this dangerous channel, even during calm weather, it is often called the Race of Negrais, and certainly should be avoided by ships; for by rounding the south end of Alguada Reef, they are but a few miles farther out, in a safe and spacious channel, about 17 leagues wide, between it and the Island Preparis.

Marks for the Reef.

When the sea is smooth in the N. E. monsoon, the breakers on Sunken Island are not high, but when the weather is clear, the approach to it may always be known by the bearings of the land; for when the west end of Diamond Island is coming into contact with the east end of the hill on Negrais Island, Alguada Reef is then in the same direction, bearing N. N. E., and the western extreme of Cape Negrais will bear nearly north. At 4 or 5 miles' distance from Alguada Reef, both to the eastward and westward, the depths are generally from 15 to 17 or 18 fathoms blue mud, and to the southward of it, at the same distance, 19 and 20 fathoms. It is prudent not to approach Alguada Reef nearer than 2 leagues on the east side, nor under 3 leagues on the N.W. side, on account of the rock situated to the S. Westward of Diamond Island, mentioned above. About 4 or 5 leagues to the westward, the bank shelves suddenly to no ground, but soundings extend from Alguada Reef to Preparis, and the depths increase to 40 and 50 fathoms in the track between them; near to Preparis Island they are irregular in some places, but on the east side of the island, decrease to 8 fathoms within less than a mile of the shore, where there is a pool of fresh water.

Passage to Bengal.

SHIPS BOUND TO BENGAL IN THE NORTH-EAST MONSOON should not keep within sight of the coasts of Ava and Aracan, which was formerly considered

indispensable to secure the passage; but experience shews, that northerly or light winds prevail greatly on these coasts, and the current sets often to the southward, rendering the progress at times very slow; it therefore happens, that coppered ships which keep out in the open sea, at a reasonable distance from the land, generally make the best passages up the bay in this monsoon. Ships which sail indifferently, or being short of water, if they intend to adopt the passage along the coasts of Ava and Aracan, ought to keep well in with the shore where it is safe to approach, that they may benefit by the breezes from the land, when these are found to prevail; and also to preserve moderate depths for anchoring, when it falls calm, with the current unfavourable.

Severe storms are liable to happen at the setting in of the N. E. monsoon, and at times in the S.W. monsoon. November 12th, 1797, the Company's ship Minerva had a hurricane from the eastward, off Cheduba, which blew away all her sails, broke the top-masts, washed an anchor and some casks from her gunwales and waist, and obliged them to cut away some of the boats. Many other ships have been dismasted, or suffered damage, in October or November, near the coasts of Aracan or Ava.

COAST OF PEGU, WITH DIRECTIONS FOR SAILING TO AND FROM RANGOON RIVER.

DESCRIPTION OF THE COAST.

THE COAST OF PEGU extends from Negrais River to the Gulf of Martaban, and is generally low and woody, intersected by the many branches of the Irrawady and other rivers, with reefs and shoal water extending along it to a considerable distance; it is, therefore, a dangerous coast in the S.W. monsoon, for the tides set strong, and a ship might run aground in some places before the land could be perceived. Coast of Pegu.

Between the Negrais River, in 94° 25′ E., and the Rangoon River, in lon. 96° 20′ E., the coast is but imperfectly known; its general direction from Porian Point is S. Easterly, changing gradually to N. Easterly, and the whole of it is fronted by a reef projecting 2 or 2½ leagues from the shore in some places, with hard ground close to it 6 or 6½ fathoms. When 22 miles East from Diamond Island by chronometer, in lat. 15° 40′ N., a ship will have 6½ fathoms on the edge of the reef, a low point then bearing N. E. ¾ N., distant 8 or 9 miles. From hence, the coast stretches E. by S. and East 12 or 14 leagues to Baragu River, but the reef takes a more southerly direction in some places, where it projects 3½ and 4 leagues from the shore; about 14 leagues eastward from Diamond Island, and from thence to about 25 leagues East from the same island, the reef extends farther to the southward than at any other part of the coast, the latitude of its southern verge being here about 15° 35′ N., where it extends from the land 4 and 5 leagues abreast of Baragu and Dalla Rivers. It is dangerous and steep, and from 7 to 3 fathoms the distance is not more than half a mile, perhaps much less in some places.

From Dalla River the coast changes its direction, and stretches nearly N. E. to the Coast from Dalla River.

entrance of Rangoon River about 20 or 22 leagues, having reefs and shoal banks as before projecting from it 3 or 4 leagues, which should not be approached under 5 or 6 fathoms. The whole of this space is low land, intersected by many rivers and creeks, which form numerous islands; the best guide in approaching it is the soundings, for near the verge of the reef abreast of Baragu Point and farther westward the bottom is generally sand and shells, or hard and stony; between Dalla River and Rangoon Bar it is mostly soft ooze, and to the eastward of the bar it is generally stiff mud.

Exclusive of the quality of soundings, in clear weather the following land-marks may be seen, which will point out the entrance of Rangoon River. The first that will be discerned in coming from the S.W. is a grove of trees, about 5 or 6 leagues to the S. Westward of Rangoon River, called China Buckeer, which in some views resembles a quoin, but it is not seen until a ship gets into 6 fathoms water; in approaching it from sea, bearing about North, it will be seen from the mast-head, appearing like a small island, and the latitude will then be about 16° 10′ N. China Buckeer is the mark that ships bound for Rangoon River first endeavour to see, to prevent being carried past their port to the N. Eastward by the flood tide.

Rangoon River.

RANGOON RIVER is called also Sirian and Pegu River; on the bar there are $3\frac{1}{2}$ and 4 fathoms, and some parts, dry at low water spring tides, are visible on the steep banks on both sides of the channel.* This river may be easily known by the clump of coco-nut trees called the Western Grove or the Elephant, which, with a little help of the imagination, does somewhat resemble that animal, situated on the point of land that forms the west side of the entrance. A little way from it there are three palmyra trees on a small rising ground, and a few more between them and the point. The Elephant, by Captain Heywood's observations, is in lat. 16° 29′ N., lon. 96° 25′ E., or 2° 6′ E. from Diamond Island by chronometer. Captain Ross, in his late survey, made the Elephant Pagoda in lat. 16° 28′ N., lon. 96° $23\frac{3}{4}$′ E. On the east side of the entrance the trees grow thicker together, and are sometimes called the Eastern Grove; here, they are more even at top and not so high as those on the west side, and what is very remarkable, on the N. E. side of the river there is not *one* palmyra tree *between the north-east point* and a *small mount* or hillock inshore which shews itself above the trees; although from that mount to the eastward there are many growing at some distance from each other, all nearly double the height of the other trees which surround them.

Elephant.

The Town.

Rangoon Town is situated on the north shore of a considerable branch of the principal river that extends to the westward about a league, and then takes a northerly direction as before: the town, distant about 8 leagues to the northward of the bar, is a place of considerable trade. The country abounds with straight teak timber,† some of which is exported to Calcutta and other parts of India for ship-building; and there are many ships of various dimensions built at Rangoon, although the crooked timber here is not so durable, and far inferior to that used on the Malabar coast for ship-building. Rice, poultry, hogs, fruits, and vegetables, and other articles

Supplies.

* The ship Janet Hutton was wrecked in 1825, on the edge of the sands, on the western side of the channel, with the Elephant Pagoda bearing about N. $\frac{1}{2}$ W., distant $5\frac{1}{4}$ miles.

† The forests of large *straight* teak are situated on the low country in the vicinity of the rivers; the trees are cut down in the dry season, and when the low country is inundated by the swelling of the rivers during the rains, the felled trees are conducted to the river and floated down in large rafts to Rangoon. In the hilly country there is *probably* plenty of *crooked* teak timber for ship-building, but the inconvenience of getting it to the rivers has hitherto proved an obstacle too great for the natives to attempt bringing any of it to Rangoon.

of refreshment, may be procured in abundance and at reasonable prices. Wood oil, earth oil, wax, dammer, and other articles, are exported from hence.

Dagon Pagoda is about $1\frac{3}{4}$ miles to the N. N. W. of Rangoon town, elevated 487 feet above high water level, by the observations of Captain Ross, who places it in lat. 16° 47′ N., lon. 96° 13′ E., by mean of chronometers from Fort William and Chittagong, corroborated by lunar observations. Position of the Great Pagoda.

High water at Rangoon at 5 hours 30 minutes, on full and change of moon; rise of tide then, and for two days afterwards, from 20 to 21 feet, and 13 or 14 feet on the neaps. Variation 2° 48′ Easterly by theodolite, in 1825. Tides.

SITTANG RIVER, about 10 or 11 leagues E. N. Eastward from Rangoon Bar, is the easternmost and principal branch of Pegu River; it is shoal, but wider than the other, generally called Rangoon River, and it forms a natural division between the low coasts of Pegu and the high land called Zingaat Mountains, or Martaban Hills, by falling into the bottom of the Gulf of Martaban. Sittang River.

TIDES ON THE COAST OF PEGU generally run very strong; the flood sets East and E. by N., and the ebb in the contrary direction to the westward of Baragu Point; but from that point to Rangoon Bar the flood sets N. E. and N. E. by N., and the ebb to the S.W.; farther East, between Rangoon River and the coast of Martaban, the flood runs N. N. E. and N. by E., strong into the bottom of the gulf, and the ebb equally strong out of it, in the opposite direction. When the rivers are swelled, and the low country inundated by the rains at the end of the S.W. monsoon, the ebb tides are much stronger and run longer than the flood tides, occasioned by freshes from the rivers; the water then is very thick and muddy at a considerable distance from the land, which is more or less the case on this coast at all times, opposite to the numerous rivers that disembogue into the sea. Tides.

Abreast of Baragu Point, and farther westward, the velocity of the tides is not near so great as off Rangoon River and in the bottom of the gulf; for here it is frequently in the springs 4 and 5 miles an hour, and sometimes more near the edges of the shoal banks. After the rains, the tides off Rangoon River are subject to a circular motion, the first of the flood sets East, changing gradually to N. E. about half flood, and to North in the latter part. The ebb sets just the reverse: beginning to run West, it changes gradually to S. W. and South, ending at S. E.; but there is no slack water at these times, the tides continuing to run $1\frac{1}{2}$ or 2 knots when changing from the flood to the ebb, and the same at the opposite change.

On the west part of the coast, off Porian Reef, the perpendicular rise and fall of the tide is only 9 or 10 feet on the springs; but off Rangoon Bar it is frequently 20 or 21 feet, and from 21 to 24 feet farther to the eastward in the bottom of the gulf near the banks at the entrance of Sittang River; caution is therefore proper in making free with this part of the coast, and it is necessary to acquire a knowledge of the tides in order to prevent any mistake, by anchoring near high water in a situation where a ship would be aground at low water.* It is high water at the Elephant Point and on Rangoon Bar about $3\frac{1}{2}$ hours on full and change of the moon.

* Captain P. Heywood, in his Majesty's sloop Trincomalee, November 19th, 1801, anchored in $5\frac{3}{4}$ fathoms at high water, and had only 13 feet at low water, with the Elephant trees bearing N. 36° W. about 5 leagues; westernmost extreme of the land N. 78° W. A remarkable mount on the east side of Rangoon River N. $22\frac{1}{2}$° W.; N. E. extreme N. 49° E. Martaban Hills E. N. E. This was the day preceding full moon, and the water

PASSAGES TO AND FROM RANGOON.

Passage from the westward to Rangoon in the N. E. monsoon.

SHIPS BOUND TO RANGOON from Bengal in the N.E. monsoon should make Cape Negrais, and pass round to the southward of Alguada Reef; those which come from Madras or other parts of the Coromandel coast in the same season, after beating across the bay, may pass through the channel between Alguada Reef and Preparis, or between the latter and Cocos Islands, as may be most convenient. In this season, from October to February, it is prudent, after passing Alguada Reef, to steer to the eastward for Baragu Point, endeavouring to keep in with the coast, for at times there is very little flood, the freshes from the rivers frequently producing a constant current setting to South-west and round to North-west.

If you fall in with the land to the westward of Baragu Point, the water will shoal quickly from 20 to 16 and 10 fathoms towards the edge of the reef; and in a large ship it would be imprudent to borrow under 9 or 10 fathoms, for in some places the edge of the reef takes a S. Easterly direction, and is steep from 6 to 3 or $3\frac{1}{2}$ fathoms, when the low land is hardly discernible.

Soundings extend a great way out from this coast, there being 43 and 44 fathoms about 24 leagues South from Baragu Point, in lat. 14° 30′ N.; and from thence, soundings continue on the same parallel to the coast of Martaban.

If not affected by lateral tides, the depth will decrease in steering East, when a ship is to the westward of Baragu Point; steering the same course, it will decrease when she is to the eastward of that point, and she may then steer to the N. Eastward if the wind admit, borrowing to 7 or 8 fathoms towards the edges of the banks that line the coast. If the wind be far eastward, rendering it necessary to tack at times, the coast may be approached to $6\frac{1}{2}$ and 7 fathoms, or nearer occasionally, when to the eastward of Baragu Point and Dalla River; the soundings over a soft bottom being then more regular, and the banks not so steep as they are to the westward. On approaching Rangoon River, haul in to get a sight of the land, and make it in about lat. 16° 10′ N.; China Buckeer may then be seen, appearing like a low island, if the depth is not above 6 fathoms, and will probably bear N. by W. $\frac{1}{2}$ W., or N. N.W., but it cannot be discerned when the depth of water is more than $5\frac{3}{4}$ or 6 fathoms. After passing China Buckeer the coast may be approached occasionally in a small ship, to $3\frac{3}{4}$ or 4 fathoms at low water, or to 6 fathoms at high water; the Elephant will soon be perceived, and when it bears N. by W. the Eastern Grove on the opposite side of the river may be seen bearing to the eastward of North; it will then be proper to anchor and make the signal for a pilot, or dispatch a boat with an officer into the river for one, if the weather is favourable.

If the land be not seen when in shoal water, with the bottom stiff mud, and the tides be found to set N. N. E. or N. by E., and opposite, you will, in such case, be to the eastward of the bar, and must haul to the westward with the ebb until the bottom is soft and the tides be found to set more to the N. E. and S. Westward, then steer in for the land and endeavour to get sight of the Elephant and Eastern Grove, where you may anchor off the bar and wait for a pilot.

Passage from the southward.

Ships bound to Rangoon from Malacca Strait, Achen, or the Nicobar Islands, in the N. E. monsoon should endeavour to pass in sight of the westernmost islands of the Mergui Archipelago, and from thence to the northward in a direct line for the en-

seems to have been very shoal at 5 leagues' distance from the land, but the place where this ship anchored with these bearings was probably to the eastward of the fair channel leading to the river.

trance of Rangoon River. Should circumstances render it necessary, at a ship's arrival there, to venture over the bar without a pilot, the best track is to bring the two points that form the entrance of the river a little open, and steer in with them open about a ship's length, observing to keep, if possible, nearly in mid-channel. In proceeding to cross the bar, it ought not to be attempted before half-flood, for the first of the flood sets strong to the eastward upon the Middle Ground Shoal, situated on the east side of the channel, which, close to, has deep water and irregular soundings. If Ental Point on the east side the river open fast with the western point of the same, a ship ought not to anchor until the tide set fair into the river, which is after half-flood, and that is the most favourable time to cross the bar. Coming from the S.W., when the Elephant is brought to bear N. by W., a ship ought to haul up for the channel, the pagoda at the Elephant bearing N. by W. ½ W. to N. N. W., being a fair bearing until within 2 or 3 miles of the bar; and it may be observed, that if Ental Point is kept open with the western point of the river's entrance she will not ground on the west side of the channel, until the shoal spit fronting the Middle Ground is approached, which extends from the Elephant Point 3 miles, the tail of it bearing S. E. from the Elephant Pagoda, having only 1½ fathoms on it at low water, and the channel between it and the middle ground is rather less than a mile wide.*

To proceed over the Bar into the river.

When within the bar, and having brought the Elephant or Western Grove to bear about South, the western shore should be borrowed on close, the channel on that side being free from danger nearly to the distance of three leagues up the river.

Although the pilots have sometimes got ships upon the Middle Ground, yet, if unacquainted, it would be imprudent to attempt to cross over the bar without one, particularly in a vessel of considerable burthen, unless in a case of necessity. When Captain Ross surveyed the river, he placed Red Buoys on the tails of the sands which lie on the west side of the channel, and Black Buoys on those which lie on the eastern side.

Passage from the westward to Rangoon in the S. W. monsoon.

If bound to Rangoon from Bengal in the S.W. monsoon, a ship should endeavour to make the Island Preparis, or rather the Cocos Islands, if the wind admit; and after passing through either channel as most eligible, a course ought to be steered to fall in with the coast of Pegu, about China Buckeer, or little to the westward of Rangoon Bar. A ship from Madras, or any other part of the Coromandel coast in the same season, ought to make Landfall Island at the north end of the Great Andaman, if the wind be far southerly, or the Cocos Islands, if it be at westward, then pass through the channel between them. From the Cocos Channel, she may steer about East to get a sight of Narcondam if the weather be clear, and then to the N. Eastward for the land on the west side of Rangoon Bar. If by accident she get to the eastward of the bar a few leagues, Martaban Hills will be seen if the weather is clear; and in such case she must work to the westward with the ebb tide.

Passage from the southward in the S. W. monsoon.

Ships bound to Rangoon, from the Nicobars, Achen, or Malacca Strait, in the S.W. monsoon, ought to make the Island Narcondam, and from thence steer as before directed, to fall in with the land a little to the westward of the bar. All ships approaching the coast of Pegu in this season ought to be well provided with ground tackle, for the weather is often dark and squally, preventing the land from being seen, and it would generally be imprudent to borrow under 6 fathoms, until some part of the

* An excellent survey of Rangoon River, from below the bar to the Kemmendine or Dagon Pagoda, by Captain Ross, the Company's Marine Surveyor, in 1825, has been engraved for the benefit of navigation, and should be procured by every ship bound to Rangoon; although it must be observed, that the banks and channels are constantly undergoing changes by the strong freshes and rapid tides.

coast is discerned and the situation known; ships are, therefore, necessitated at times to ride at anchor during strong gales on the springs when the tides are very rapid; this ought to be done in 7¼ or 8 fathoms water at least, and not in shoal water near the banks which bound the coast.

Passage from Rangoon in the N. E. monsoon.

DEPARTING FROM RANGOON RIVER in the N. E. monsoon, ships bound to Bengal should steer, when clear of the bar, to pass at a moderate distance outside the shoals that stretch from the coast, then to the southward of Sunken Island; afterwards, they may keep at a reasonable distance from the coasts of Ava and Aracan, in proceeding toward the River Hoogly. Those bound to Madras, or other parts of the Coromandel coast, may at discretion pass through any of the channels between Sunken Island and Landfall Island at the North end of the Great Andaman, and then steer direct for their port, observing to fall in to the northward of it before February, and afterwards to the southward. Ships in the same season bound to Malacca Strait ought to make the south end of Junkseylon; and if bound to Achen or the Nicobar Islands, a direct course may be pursued to the place of destination.

Passage from Rangoon in the S. W. monsoon.

Departing from Rangoon River in the S.W. monsoon, it is proper to work to the westward along the coast as far as Baragu Point, before a ship stand out into the open sea, whether she be bound for Bengal, the Coromandel coast, Achen, or Malacca Strait. In coming out of the river, the pilot should not be permitted to take leave until the ship is well out, with the Elephant bearing N. by W., and in 5 fathoms water, unless those on board are well acquainted with the coast, and the exact situation known. In 5 fathoms with the Elephant N. by W., she will be near mid-channel; stretching from thence to sea, the water will soon shoal to 4½ fathoms, then she should tack and stand inshore to 6 fathoms and again tack, for the *increase* of depth denotes the approach to the inshore dangers.

When China Buckeer is brought to bear W. by S., longer tacks to seaward may be made at discretion, but it is advisable to keep near the coast, anchoring occasionally, and taking advantage of the tides, which run very strong. When in 5½ fathoms near low water, with China Buckeer bearing W. by N. 4 or 5 leagues, it may be seen appearing *like* a small island in the form of a quoin, and a very little of any other part of the coast will then be discernible. Should it be night before a ship is abreast of China Buckeer, she ought with the ebb to be permitted to drive to the windward under staysails, and the lead carefully attended to, that her situation may be known. The approach towards the shore will be shewn by the lead, the soundings being regular until a small patch of land called *False* China Buckeer is bearing N. N.W., or until the opening of Dalla River is abreast. Having got this far, the coast should not be borrowed on nearer than 7 or 8 fathoms; the soundings will be ooze throughout until Dalla River is passed, then sand and shells, which is a certain sign of the approach to Baragu Point. From this point, ships which sail well, if bound to Bengal, may continue to work to the westward, and pass between the Cocos and Preparis Island, or near to the northern part of the latter; and from thence, if the wind keep between S.W. and S. S.W., they will probably reach Balasore Road without tacking; otherwise, they must endeavour to get to the westward, by taking every advantage to tack with the favourable shifts.

Passage to Madras.

Ships bound to Madras will find it tedious and difficult to beat across the bay from the coast of Pegu during the S.W. monsoon, and those that sail indifferently will find it impracticable; it therefore seems advisable for them to pursue the same route as if bound to Achen. After working one or two tides to the westward of Baragu Point, a

ship bound to Madras, or any port on the Coromandel coast, to Achen, or Malacca Strait, may stand out to sea if the wind is well to the westward, and endeavour to pass near the Island Narcondam; in proceeding to the southward, care is requisite to tack occasionally and keep well to the westward of the Archipelago of Islands fronting the coast of Tanasserim, which form a lee shore, although between several of them there are safe channels. If bound into Malacca Strait, after rounding the south end of Junkseylon, a direct course may be steered for Prince of Wales Island, but a ship bound for Achen ought to keep well to the westward, towards the Nicobar Islands, if that can be conveniently done; otherwise, she may stand close upon a wind to the southward and make the coast of Pedir, where a favourable current will be found setting to the westward, which will soon carry her to Achen. At this place she ought to fill up her water, if bound to the Coromandel coast or to Ceylon, then proceed through the Bengal passage, close round the north end of Pulo Brasse, to sea, as circumstances render convenient. When out in the open sea, every advantage should be taken to get to the S. Westward, and an indifferent sailing ship will probably have to proceed several degrees South of the equator before she can obtain westing sufficient to reach her port with safety. Ships that sail well upon a wind may make a more direct passage from Achen to the Coromandel coast, which has sometimes been accomplished in less than a fortnight, during the strength of the S.W. monsoon, although a longer time may be required.

The Company's ship Arnaad, Captain Corstorphine, left Rangoon River July 3rd, 1826, passed Achen on the 25th, and round the north end of Pulo Brasse on the same evening, and on the 5th of August arrived at Madras; having only made a few short tacks in crossing the bay, when the wind drew to the westward three or four times.

COASTS OF MARTABAN AND TAVOY.

THE ZINGAAT MOUNTAINS, or MARTABAN HILLS, occupy the tract of land, North of Pelew Gewen Island, which is comprehended between the Sittang and Martaban Rivers; they are distant from the mouth of Rangoon River about 17 leagues, and bear nearly East from it. At the foot of these hills is the Town of MARTABAN, or MAUTAMA, on the north bank of the river of the same name.* The Town of Moulmein, in lat. 16° 30′ N., on the south bank of the river, opposite to Martaban, and 25 miles from Amherst, has been founded as the chief British settlement on this northern boundary of the ceded provinces.

Zingaat or Martaban Hills.

PELEW-GEWEN ISLAND, formerly called Bruxe or Buga, occupies the head of the Gulf of Martaban, its N. E. point fronting the river of that name. It is moderately elevated, and is said to be very fertile; it is 17 miles long and 8 broad, extending from lat. 16° 14′ to 16° 31′ N. Pelew-Gewen is fronted to seaward by shoal banks, which prevent the navigation of the passage, north of the island leading to Martaban;

* This river is also called San-luen, or Sanloan Meyeet; Meyeet or Myeet signifying a Great River, in the Burmese language.

the only available channel being that which runs due North and South, between the eastern shore of the island and the main. The entrance to this channel is 7 miles South of the island, being formed on the N.W. by an extensive sand-bank called the Godwin Sand, which projects from the south point of the island, and by the reefs of Cape Kyai-kami to the S.E. The Godwin dries in some parts at low water spring tides. The distance from the bar to the town of Martaban is about $8\frac{1}{2}$ or 9 leagues, nearly north, but the depths in the channel are not more than $1\frac{1}{2}$, 2, or 3 fathoms in several places, and the river contains many banks and dangers, which render the navigation intricate for persons unacquainted.

Cape Kyai-kami Quekmi Pagoda.

CAPE KYAI-KAMI, or QUEKMI, called also Cape Champion, upon which stands the Pagoda of Quekmi, bounds the entrance of the Martaban River on the eastern side, and lies in lat. 16° $4\frac{1}{2}'$ N., lon. 97° 35′ E., or 9° $14\frac{1}{3}'$ East from Fort William, and being low, is not seen above 12 miles from the deck; but the mountain about 5 miles to the S.E. of the point is visible 9 or 10 leagues off. The reef extends from the point in a N. Westerly direction $1\frac{1}{2}$ miles, rendering great caution necessary, for there is no good land-mark on the western side of the channel to guide a ship in entering between the reef and the Godwin Sand.

Martaban River.

MARTABAN RIVER, having been fixed on as the boundary between the Burmese dominions and the territory ceded to the British Government, Amherst Town or Village, in lat. 16° 5′ N., has been built on a peninsula (to which the same name has been given), situated near the mouth of Martaban River, and formed between the Kalyen River to the eastward, and the sea terminating in Cape Kyai-kami. The tides in the Martaban River are strong, their velocity being about 5 miles per hour on the springs, and 3 miles during the neaps: high water at 2 hours 20 minutes at the point of the reef, at full and change of moon, and at 2 hours at Amherst; and the rise of tide from 20 to 22 feet: the depths at low water in some parts of the channel are only about 2 fathoms, and it is very narrow between the reef at the entrance and the tail of the Godwin Sand to the westward; there are also some narrow gaps in the reef, one of which is called Brisbane Passage, which ought never to be attempted by any ship. No vessel should run into the harbour at low tide, if drawing above 10 feet water, and the best time to enter with a fair wind is at high water slack, as the tide sets very rapidly across the narrow passage, liable to set a ship on the Godwin Sand; but a pilot will be required for strangers. As this place is intricate and very dangerous at all times, particularly in the S.W. monsoon, it cannot be expected to become of much importance for shipping. It is advisable to approach the entrance of this river in lat. 16° N., and when on this parallel, in lon. 96° 30′ E., the Zingaat Mountains will be discernible in favourable weather. If soundings of 10 or 11 fathoms are obtained, a vessel will be on the Martaban coast; but if they decrease to 6 or 7 fathoms, she will be on the edge of the banks fronting Rangoon River or the adjacent coast. A ship sailing from Amherst in the S.W. monsoon, before obtaining an offing, may probably be obliged to anchor two or three times during the flood tide, with the risk of riding very hard, or parting her cable by the heavy sea.

Tides. Directions.

The Ernaad's passage to and from Martaban River.

The Ship Ernaad, Captain Corstorphine, left Martaban River June 22nd, 1829, bound to Madras, with squally and rainy weather for two days, and was obliged to make several tacks to the westward to obtain an offing before she could stretch to the southward.

Again, the Ernaad left Madras June 3rd, 1829, for Martaban River; on the 7th

passed through the channel between the Cocos and Andaman Isles; arrived off the entrance of Martaban River on the 12th, and got a pilot on that day; but squally, unsettled, rainy weather, light airs and calms, rendered it unsafe for her to run for the harbour against the strong tides which ran out, and to cross the entrance; she was therefore obliged to remain at anchor outside till the 14th, and on that day got into Amherst Harbour.

Captain D. Ross, the Company's Marine Surveyor, gives the following directions for approaching Amherst Harbour, which he minutely surveyed. It is proper to make the land between a small island named Double Island in lat. 15° 52′ N., and the small isle in lat. 16° 3′ N., which is about $1\frac{1}{2}$ miles to the southward of the Pagoda, as without this precaution, the strong tides may sweep a ship past the buoy that is placed at the point of the reef, and carry her on the Godwin Sand. When $1\frac{1}{2}$ or 2 miles to the westward of the small isle, and if then the Reef Buoy is seen bearing about N. N. E., endeavour to approach it bearing about N. E., and anchor about a cable's length to the N.W. of it in $4\frac{1}{2}$ or 5 fathoms at low water: the depths outside will vary from 9 to 13 fathoms, and when about three-quarters of a mile to the S.W. of the buoy, there are overfalls from 9 to 14 fathoms, quickly shoaling to 7 fathoms at the entrance between the reef buoy and the Godwin Sand. It is almost indispensable to anchor in the situation mentioned above, to wait for a row-boat and pilot, as the channel is narrow, the bottom very uneven, and the soundings no guide. If the wind be from southward or westward, high water is the time to weigh, or just at the commencement of the ebb; but if at North or N. E., the last quarter of the flood is the proper time to weigh, in order to have a weak tide under lee, and be enabled to keep the row-boat on the larboard bow, while she proceeds along the sand, and shewing the depth of water by a flag. The extremity of the reef being very near the buoy, no ship must pass to the eastward of the latter. The anchorage at Amherst will admit several ships, but must be avoided by large vessels in the S.W. monsoon, being open to all winds from S. S.W. to West and N.W., when a considerable swell rolls in through the gaps of the reef. *Capt. Ross's directions for approaching Amherst.*

From Cape Kyai-kami to the southward, the coast may be approached within $2\frac{1}{2}$ or 3 leagues, but not under 5 or 6 miles in some places; for by the late survey of Captain Ross, patches of rocks are interspersed at the distance of 3 and 4 miles from the shore, to the southward of Double Island, already mentioned, which small isle is distant $4\frac{1}{2}$ miles from the land, having 6 and 7 fathoms inside, and 8 fathoms near it on the outside. The coast is low fronting the sea, and forms a bay occupied by a shoal flat. The flood a little outside, in 9 fathoms water, has a velocity of 4 miles per hour on spring tides, and augments in strength as Cape Kyai-kami is approached.

CALAGOUK ISLAND, extending from lat. 15° 30′ to 15° $35\frac{1}{2}$′ N., lon. 97° 41′ E., is the only place between Cape Kyai-kami and the Moscos Islands affording safe anchorage in the S.W. monsoon; it has been carefully examined by Captain Ross, during his excellent survey of the coast. The island lies $4\frac{1}{2}$ miles distant from the main, its length being parallel with the shore; the passage inside it has soundings from 5 or 6, to 8 and 9 fathoms, affording anchorage in 6 or 7 fathoms, close to the highest land at the N. E. part of the island, where fresh water may be obtained. A ship is well sheltered by the island, and by the shoal banks which extend from its north end 5 miles N. by E. There is a passage about a mile wide between the N. E. extremity of these banks and a small isle near the main, in which the soundings are from 6 to 9 fathoms; but the proper channel leading to the anchorage is round the south end of Calagouk, off which, at a quarter of a mile distance, is a small isle, with a reef project- *Calagouk Island and anchorage.*

ing about a quarter of a mile to the southward of it. The west side of Calagouk is also lined by a reef, and should not be approached under 11 or 10 fathoms. In proceeding round the small isle, pass to the southward of it at 1 or 2 miles' distance in 7 or 8 fathoms, and when it bears about N. by W. haul to the northward, and pass it on the east side at any convenient distance from a quarter of a mile to 1 or 1½ miles, it being safe to approach on that side; then steer along the east side of Calagouk to the anchorage above mentioned, and the soundings will be 6 or 7 fathoms, deepening to 8 or 9 fathoms in mid-channel between the island and the main, which is low near the sea, and lined by a reef: but there are two peaked hills about 3 leagues inland, and a high mountain at 7 leagues' distance to the eastward.*

Yeah River. YEAH RIVER, Pagoda Point forming the north side of the entrance, is in lat. 15° 12′ N., lon. 97° 48′ E., and the entrance of this river is fronted by a group of islands and reefs of breakers at the distance of 4 or 4½ miles, which seem not to admit of a navigable channel into the river for large vessels. Pootchoon, the northernmost, and Nai-oojoon, the southernmost of the group, are the largest of these islands; Thoatail, the central one, and another to the S. Eastward, are small. Yeah Town, the capital of the small province of this name, now belonging to the British Government, is about 5 or 6 miles above the river's mouth, in lat. 15° 14′ N. A ridge of high land, that may be seen at 10 leagues' distance, extends from Pagoda Point along the coast nearly 3 leagues, and several small isles or reefs lie contiguous to the shore between Calagouk and Yeah River, which render it prudent to keep at 4 or 5 miles' distance in coasting along, and not to come under 12 or 11 fathoms water. Tides. The flood sets along the coast to the northward at the rate of 3 miles per hour on the springs, opposite to Yeah River. From the group of islands fronting this river, other straggling islands and reefs extend along the coast at 4 miles' distance to lat. 15° 0′ N., with irregular soundings near them.

Ross Sand. ROSS SAND is a sand-bank at 7 miles' distance from the coast, its northern extremity being in lat. 14° 58′ N., where the least water found by Captain Ross was 3 fathoms, from whence it stretches South about 2 leagues, with depths from 3 to 4 fathoms, deepening to 5, 6, and 7 fathoms on its southern part, and having from 12 to 15 fathoms contiguous to its western edge, with 10 and 12 fathoms inside. A ridge of high land extends from Yeah to the southward, and approaches near to the sea opposite to the above sand-bank, having two peaks forming a saddle, the northernmost of which is in lat. 15° 0′ N. From hence to the Moscos Islands the coast should not be approached under 5½ or 6 miles, being fronted by contiguous rocks, and by a sand-bank with 4 fathoms water, which stretches out to the distance of 5 miles from the shore in lat. 14° 40′ to 14° 36′ N., having a little to the North of it the entrance of a river, fronted by rocks above water: the south point of this river forms like a Dolphin's nose.

In lat. 14½° N., soundings of 22 to 28 fathoms are got about 4 and 5 leagues to the

* A survey of the channel and anchorage inside the Island of Calagouk was made in 1830, by Mr. Icely, of H. M. S. Satellite, under the direction of Capt. Laws, from whom the anchorage received the name of Bentinck Sound. Vessels, he says, of 10 feet draft may be laid on shore for repair at North Creek, about a mile from the north point of the island. Wood and some fruit may be procured, and 3 or 4 tons of water per day in the dry season at Mahomed's Well, which is near the sandy beach 1½ miles farther to the southward. Buffaloes and rice are to be had at a village up Dermonjai Creek, on the mainland opposite. High water at 12h. 50m. Rise, 19 feet.

westward and S. Westward; but farther to the northward, the depths decrease to 12 fathoms at the distance of 7 or 8 leagues from the land, and at the distance of 10 leagues from it, in lat. 16° N., there are only 7 or 7½ fathoms at low water.

Moscos Islands.

THE MOSCOS ISLANDS extend in a chain parallel to the coast from lat. 14° 28′ N., to lat. 13° 47′ N., and are distant from it 3 to 4 and 5 leagues, having a safe channel inside, between them and the coast, with soundings mostly from 10 to 15 fathoms, deepening generally near the islands, and shoaling to 8, 7, and 6 fathoms near the main. Between the southernmost and middle groups there are safe channels, and these are the largest and highest of these islands; the northern part of the chain is composed of straggling islands of various sizes, with several rocks above water. A mile and a half E. by S. from the northernmost isle there is a reef under water, and another reef about 2 miles N. ½ E. from the same isle, with a rock above water near the latter, called the North Rock. Between this rock and the reef there is a channel with 17 to 19 fathoms water, and close to both these reefs the depths are 16 and 18 fathoms. The North Ledge, a sunken reef, lies 6 miles off shore, in lat. 14° 30½′ N., about 4 miles N. N. E. from the northernmost island; and there is a safe channel, with depths of 13 and 14 fathoms, about 1½ miles wide, formed between the North Ledge and the other reef to the S. Westward. Close to the North Ledge on the inside, there are 9 fathoms water, gradually decreasing to 4½ or 5 fathoms, about 1½ or 2 miles off shore, near the mouth of a river that bears E. N. Eastward from the Ledge. The southern group of Moscos Islands is distant 3 leagues from the nearest shore, the islands are steep, having 20 or 22 fathoms close to, on their western sides.

Tavoy Point.

TAVOY, or TAVAY Point,* in lat. 13° 32′ N., lon. 98° 12′ E., forms the west side of Tavoy River's entrance. It is moderately high, bluff, covered with trees, and may be easily known by the Cap, a small round bushy islet, bearing from it W. by S., distant about 1¾ miles. Inside of Tavoy Point, there is good anchorage over a soft even bottom, and a large ship need not bring it to the southward of S.W. by S., where she may anchor in 6 fathoms; but a small ship of light draught may go in much farther. Anchorage.

Watering place.

This place is convenient for wooding and watering;† the water is filled at a small brook, a little way round to the northward of the point, and near a rocky islet, which is not more than 10 or 12 yards from the shore. About 2 miles to the northward of the watering place lies the mouth of a salt water creek, abounding with alligators; they are so numerous, that none of the people belonging to ships should be permitted to bathe either alongside or near the beach.

Directions.

Ships proceeding to the anchorage under Point Tavoy to procure wood or water, may, with a leading wind, steer towards the Cap and pass it at any convenient distance; the soundings from the offing decrease to 15 or 14 fathoms near to Cap Islet, and there are 18 or 19 fathoms close to Tavoy Point, which depths continue until it bears nearly N. N. E., when Reef Island, up the harbour, begins to open, and the depth will decrease to 10 or 9 fathoms in hauling round to the northward. When the Cap is shut in with the point, there are 7 or 8 fathoms at the distance of a mile from the shore, and when the point bears S. W. ½ S. or S.W. by S., anchor near it in 6 fathoms at

* The kingdom of Tavoy is called Taway or Tawai by the Siamese. The province of Yeah is situated between Martaban and Tavoy.

† In the late war, it was much frequented by French privateers, when they were in want of these necessary articles.

Tides. high water. The tides are not very regular; high water about 10 hours on full and change of moon, and the rise is 17 or 18 feet: the velocity of the stream in the river is about $3\frac{1}{2}$ knots on the springs.

Tavoy Town. Tavoy Town, in lat. 14° 5′ N., lon. 98° 13′ E., stands on the east bank of the river, about 9 leagues from the entrance, where extensive rice fields are cultivated in its vicinity. An excellent survey of the river has been executed by Captain R. Moresby, of the Bombay Marine, in 1824, exhibiting numerous shoals and low islands, which render the navigation of the river intricate, as there are various channels among them, having in some places only 2 or $2\frac{1}{2}$ fathoms, but in many parts the depths are from 6 to 8, 10, and 12 fathoms.

Directions for the river. If a ship round Tavoy Point with a strong southerly wind, it would be unpleasant to anchor in the outer road under the point; in such case, she may run into the river, passing Reef Island on the east side at half a mile to 1 mile distant, then keep within half a mile of the other islands which bound the river on the west side, and the soundings will not be less than 5 or $5\frac{1}{2}$ fathoms in this track. After being 2 or 3 miles to the northward of Reef Island, she may anchor close to the western shore, or she may run farther up into 4 or $4\frac{1}{2}$ fathoms above Reef Island, where she will be well sheltered to the northward of the third large island, where there is fresh water at a well. The eastern shore of the river is fronted by a shoal flat that occupies nearly half the breadth of the river, dry at low water spring tides in some places, towards which the depths gradually decrease from the western side of the channel.

Capt. Corstorphine's Directions. Captain Corstorphine, of the Company's ship Ernaad, gives the following directions for proceeding up the river. Reef Island is high and remarkable; steer to pass to the eastward of it, not less than half a mile distance; Button Island is 2 miles farther up, and may be passed pretty close, but not exceeding $1\frac{1}{2}$ miles' distance: from hence, the channel continues close along the western shore, where is found the deepest water. A rock, with 9 feet over it at low water springs, has lately been discovered, and may be avoided to the eastward, by keeping the Button and Reef Island a little open, until above the second bluff or rocky point beyond the Button. The best anchorage for large ships is close to the uppermost bluff or rocky point: vessels drawing only 14 or 15 feet water may proceed 4 or 5 miles farther up and find good anchorage. The

Tides. tide rises about 14 feet during the springs in the S.W. monsoon; high water on full and change of moon off the uppermost bluff point at $2\frac{1}{2}$ hours.

TANASSERIM* OR MERGUI ARCHIPELAGO, AND SEYER ISLANDS, WITH THE COAST FROM MERGUI TO JUNKSEYLON.

THE ARCHIPELAGO, or chain of islands fronting the coast of Tanasserim, was formerly little known to Europeans, but lately these islands have been explored by Captain Ross, the Company's Marine Surveyor, and the navigable channels pointed out. The bank of soundings extends outside most of the islands, and although near some of them the water is deep, yet their proximity may be known by the lead if kept going in the night, and in passing through any of the channels, or inside the islands, a good look-out will be necessary, as some undiscovered dangers may possibly exist. Tanasserim, or Mergui Archipelago.

Tavoy Island extends from lat. 13° 14′ to 12° 55′ N., the north end bearing from the point of the same name about S. by E. $\frac{1}{4}$ E., distant 16 miles; it is of middling height, about 2 miles in breadth and 6 leagues in length, stretching N. by W. and S. by E., having a peak near the middle, and a smaller one near its south end. It is the northernmost large island of that extensive chain which fronts the coast, generally called the Mergui, or Tanasserim Archipelago. Near the south end of the island there is a pagoda, and near it good fresh water. Tavoy Island.

Ships having occasion to sail between Tavoy River and Mergui in the S.W. monsoon ought to depart from Tavoy Point, or from the anchorage under the north end of Tavoy Island, so as to get across in one ebb tide, for the intervening coast is in that season a dangerous lee shore, and if a ship were to meet with the flood tide, and the wind fail between these places, she would be obliged to anchor in deep water, exposed to a high sea, destitute of shelter. Passage between Tavoy River and Mergui. From Tavoy River the ebb sets along the coast to the southward nearly half-way to Tavoy Island, where it is met by the ebb from the channel between the latter island and the main; then, after uniting, it appears to set out to seaward. The flood comes in from the sea between Tavoy Point and Tavoy Island, separating into two branches, one running North and the other South, to supply Tavoy and Mergui rivers. Tides.

There is a good harbour on the east side of Tavoy Island, on the north side of a projecting peninsula in lat. 13° 5′ N.; it is sheltered to the northward and eastward by a cluster of islands, and has a depth of water from 5 to 10 fathoms. It was surveyed by Mr. Julian, of H. M. S. Satellite, under the direction of Captain Laws, who described it as a safe and good harbour, having an abundant supply of good water and wood. This harbour has received the name of Port Owen. Port Owen.

MERGUI, called Beit Myoo by the Burmese, in lat. 12° 27′ N., lon. 98° 38′ E., by Captain Ross, who surveyed this coast in 1828, is situated at the entrance of the principal branch of Tanasserim River, and may probably become a port of considerable trade, Mergui.

* Called Tannan by the Siamese, and Tannethaiee by the natives.

as it is now in the possession of the British Government; for the country is fertile and considered to be healthy, with a safe harbour and an excellent inland navigation, well adapted for commerce.

Passage towards Mergui in the S.W. monsoon.

Ships bound from the Coromandel coast or Ceylon to Mergui, in the S.W. monsoon, ought to pass through the channel between the south end of Little Andaman and the Carnicobar Islands, or between the Little and Great Andamans, if they fall to leeward of the former. Those which come from Bengal in the same season may pass through the channels on either side of the Cocos Islands, between them and the north end of Great Andaman, or between them and Preparis; and after passing near Narcondam, they should steer for Tanasserim Island, which is in lat. 12° 36′ N., lon. 97° 49′ E., distant from Mergui about 18 leagues to the W. N. Westward. The same island should be seen by ships which pass to the southward of the Andamans. After leaving Narcondam, soundings will soon be got in steering for the islands off Mergui when they are aproached.

Position of Tanasserim Island.

Passage towards Mergui in the N.E. monsoon.

Ships bound from Bengal to Mergui during the whole of the N. E. monsoon may pass through the channel formed between Alguada Reef and Preparis; then steer to make Tavoy Island, or the Moscos Islands to the N.W. of Tavoy Point, if the wind blow steadily from the northward; they may then pass inside of Tavoy Island in proceeding towards Mergui, or to the westward of that island, betwixt the islets off it and the Canisters, and afterwards betwixt it and Iron Island.

In the strength of the N. E. monsoon, ships from the Coromandel coast should also endeavour to pass to the northward of the Andamans, and from thence take every advantage to get to the eastward.

The islands composing the Mergui Archipelago are generally high, and may be seen from 10 to 15 leagues; the bank of soundings in most places extends a little way beyond the outermost islands, by which the approach to them may be known in the night, if the lead is kept going.

Passage through the channels.

In coming from sea, Tanasserim Island, when first perceived, makes in several hills, appearing like separate islands, which on a nearer view are found to join. To the northward and southward of it, several islands appear of different sizes; of these, the most remarkable is the Western Canister, in lat, 12° 41¼′ N.,* lon. 97° 46′ E., a high steep, small, round island, about 2 or 3 leagues to the N. Westward of Tanasserim, by which it may be easily known. About 2 leagues N.E. from the Western Canister lies Cabossa, in lat. 12° 48′ N., a moderately high island, having a small islet or rock near it on the north side, and near the Western Canister are other islets. In coming from the southward, these islands may be easily known, as no others are seen to the north of Cabossa, for it is the northernmost of this range.

Position of Canister Islands and Cabossa Island.

A ship having made this latter island, may pass to the northward, or between it and the Western Canister at discretion, then steer to the eastward in soundings from 30 to 35 fathoms; as the tides set very irregularly amongst these islands, they require attention; off Cabossa it is high water about 8 hours on full and change of moon. Having passed Cabossa, the Little Canister, a high, steep, round island, covered with trees, will be seen directly to the eastward, distant about 8 leagues; it resembles the Western Canister, excepting that the north end of the latter slopes more gradually than its southern one, and forms a kind of snout. The Little Canister is bold and steep, may be passed on either side as convenient, but about 3 leagues S.W. by S. from it there is *said to be* a rock even with the surface of the sea. The Great Canister, in lat.

Great Canister.

* His Majesty's ship Pandora's observations place it a few miles farther North.

12° 56′ N., a high irregular island of middling size, bears from the former N. $\frac{1}{2}$ W., distant 2 leagues, and is also safe to approach.

Having passed the Little Canister, a ship ought to steer East from it, between the islands off the south point of Tavoy Island and the north end of Iron Island, where the channel is about 3 miles wide, and clear of danger; but the bottom in it being rocky, and the depths great, from 24 to 38 fathoms, with strong eddies at times, anchoring here is unsafe. Farther out, with the Little Canister bearing W. N.W. 2 leagues, there are 35 fathoms gravel and mud, and between it and Cabossa Island the depths are generally from 35 to 22 fathoms, where a ship might anchor occasionally.

The north part of Iron Island terminates in a point with rocks above water, having close to them from 25 to 30 fathoms water. From it bearing N. $\frac{3}{4}$ W. lies the south part of Tavoy Island chain, formed by several islets and rocks, also steep to. After passing in mid-channel between these, Long Island will be seen bearing E. by S., extending nearly North and South on the edge of a rocky bank under water, that lines the coast from Tavoy River to the entrance of Mergui River. The edge of this bank, or Long Island, need not be approached, but when round the north point of Iron Island, it is best to steer along its eastern side at 2 miles' distance, towards King Island Bay, which bears to the S. S. E.; the depths will be various from 36 to 17 fathoms, decreasing towards the bank that fronts the coast.

There is also a narrow channel between Iron Island and King Island, but destitute of good anchorage, the water being deep, with strong tides running in eddies; if the tide fail a ship in steering from Cabossa towards this channel, she should anchor as near to Iron Island as convenient, until the first of next flood; in entering the channel, she must keep nearest to Iron Island until past the islets and rocks that stretch out from King Island, the outermost islet being very low and surrounded by rocks. Although this channel might be pursued with a steady commanding breeze, that to the northward of Iron Island ought to be preferred at all times.

King Island Bay.

KING ISLAND BAY, formed between the island of this name and Plantain Island, which are two large islands, that bound the west side of the channel leading to Mergui River, is a place of shelter for ships; but in entering it care is requisite to avoid the Ly's Shoal, on which the French ship, Le Ly's, touched in 1724. It bears N. by E. $\frac{3}{4}$ E. about $1\frac{1}{2}$ or $1\frac{1}{4}$ miles from the east point of King Island, which is the north point of the bay, and it is a reef of rocks extending about a quarter of a mile nearly N.W. and S. E., with 19 feet on the shoalest part at high water, and only 9 feet at low water. When on it, the northern point, or extreme of King Island, and a small islet were in one, and Panella Island on with the highest part of the N.W. point of Plantain Island, and the northernmost of the small islands betwixt Iron and King Islands was open about a sail's breadth from the north point of the latter. Near this shoal on the north side, the depths are 7, 10, and 15 fathoms in going from it; proceeding from it towards the point of King Island, 7, 10, and 12 fathoms; and towards Plantain Island, 7 to 10, and 16 fathoms rocky ground, about a cable's length off Panella, which is a small islet upon a sand bank with some trees on it, situated a little way from the N.W. point of Plantain Island, and appears as part of it when seen at a distance. To the eastward, almost joining to the islet, there is another sand-bank; and a reef of rocks stretches to the S.W. and Westward, part of it only visible at low water.

To enter King Island Bay, a ship must keep the N. E. side of King Island a league

distant, by steering to the eastward until the bay is open, and two small islands at the bottom of it are visible; she may then enter, leaving the Ly's Shoal on the starboard, and Panella Islet on the larboard hand, taking care to avoid the reef of rocks that projects to the S.W. of the latter, for the sea seldom breaks on it, and she may be horsed towards the rocks by the turn of the tides; but the channel between the Ly's Shoal and these rocks is 2 miles wide, and with proper care is safe.

When clear of the Ly's Shoal, she must steer westward into the bay, and anchor under King Island, opposite a small bay, into which runs a stream of excellent water, with the N. E. point of the island North or N. by W. $1\frac{1}{2}$ miles, the N.W. point of Plantain Island E. $\frac{3}{4}$ S., and Long Island N. by E. $\frac{1}{2}$ E.

Tides. The bay, to the southward of the anchorage, is shoal, and the small creek that separates Plantain and King Islands is only passable in country boats. The tide rises about 16 feet, and it is high water about 10 hours on full and change of moon.

If by a change of wind or tide a ship is obliged to enter King Island Bay by the channel between the N. E. part of that island and Ly's Shoal, which is about three-quarters of a mile wide, she must keep within half or three-quarters of a mile of the shore, before she begins to approach the N. E. point of the island, taking care not to open the bay until she is within that distance of the shore; for if steering in, with the point and small islet at the bottom of the bay in one, she would run directly upon the shoal.

In going out of the bay, the best track is to keep mid-channel between the N. E. point of King Island and Panella Islet, without borrowing to the westward until past the shoal, which will be known when the second islet or rock between King Island and Iron Island is opened with the north end of the former.

Proceeding out by the Little Passage, a ship must steer along King Island, rounding the point that forms the bay about half a mile distance.

King Island, like most of the others, is inhabited, and affords plenty of large straight timber, fit for masts, and several parts of ship-building: the island is infested by tigers and snakes.

Mergui Road. MERGUI ANCHORAGE, off the entrance of the river, is about 5 leagues to the south-eastward of King Island Bay; a ship being abreast the latter place, and bound to the anchorage at Mergui, should pass the N. E. point of Plantain Island, at from 1 to 2 miles' distance, then in mid-channel, with the Little Canister kept open of the south point of Iron Island, and almost shut in by the north point of Plantain Island; the soundings will decrease, but not always regularly, from 15 to 13, 12, 9, and 8 fathoms. The best anchorage for large ships is in $6\frac{1}{2}$ or 6 fathoms at low water, with the north point of Plantain Island on with the south part of the Little Canister, the south point of Iron Island N.W., open about 10° from the Little Canister, the northernmost part of Madramacan Island, which forms the S.W. side of the river's entrance, S. 3° E., distant 3 or 4 miles, and the point on the east side of the entrance S. by E. High

Tides. water about $11\frac{1}{2}$ hours at full and change of moon; the rise of tide is 19 or 20 feet, and the velocity about $3\frac{1}{2}$ knots on the springs.

The distance is about 2 leagues from the road to the town of Mergui; vessels of moderate size, by taking pilots, can go over the bar into the river, and anchor off the town in 5 fathoms water. Elephants' teeth, wax, wood oil, and other articles, are exported from hence in ships belonging to merchants that reside here, who in general are natives of Hindoostan. Water may be had in great plenty from a run on Madramacan Island, also on Plantain Island, and in King Island Bay.

In Mergui Harbour the tides are less strong than they are even in Tavoy River, and rise from 18 to 22 feet during the springs; high water about $11\frac{1}{2}$ or 12 hours on full and change of moon at the town. This harbour is very safe, and will contain many vessels; the following directions for sailing into it are given by Captain Bresley. "After reaching the anchorage of Mergui Road, according to the instructions given in Horsburgh's 'Sailing Directory,' the two northernmost beacons will be seen to the eastward, the easternmost of which is on a spit of sand extending from the south point of the north side of Goulpia River, and is placed in $1\frac{1}{2}$ fathoms at low water.* The westernmost beacon is on the north end of Madramacan sand, placed in the same depth of water, and the proper course to follow is to keep in mid-channel between the beacons, and steer for the south end of the trees on the eastern shore, which are easily distinguished, appearing like a point of land. When abreast of those trees, you will be nearly opposite the middle Madramacan beacon placed on the eastern extremity of the sand of this name, which dries at fifty yards' distance to the westward. This beacon must be left to the westward, keeping in mid-channel between it and the sand to the eastward, the soundings will be 4 and $3\frac{1}{2}$ fathoms. The next beacon is on the south end of Madramacan sand in one fathom at low water, and may be passed at the same distance as the middle beacon, then edge over a little towards Madramacan, to avoid a spit of sand that projects from the eastern shore, nearly abreast of a small creek, which having passed, keep at any convenient distance, and run up abreast the government wharf, where the best anchorage is in mid-channel, between the town of Mergui and Madramacan, in $3\frac{1}{2}$ or 4 fathoms at low water." Tides. Mergui Harbour. Capt. Bresley's directions.

The best time for a vessel drawing above 13 feet water to weigh anchor from the road is at half-flood, when she will have sufficient water to run with to Mergui; but she ought to have a favourable wind, as the channel is too confined in some parts to admit of tacking.

In sailing from the road, a ship should observe the same marks as in entering, that is, to keep the Little Canister just open from the north point of Plantain Island, and pass the point at $1\frac{1}{2}$ or 2 miles' distance, then keep the Little Canister a little open with the south point of Iron Island; and when abreast of King Island Bay, she should steer to pass to the northward of Iron Island. Leaving Mergui Road.

To avoid the dangers on both sides the channel, when sailing to or from Mergui Road with a contrary wind, a ship may, from the entrance of King Island Bay to the small island about half-way from thence to Mergui, stand to the northward till the south point of Iron Island is on with the centre of the Little Canister, and to the southward, until within a mile, or rather less, of Plantain Island. From the small island mentioned, to Mergui Road, she may stand to the northward until the south part of Iron Island nearly touches the Little Canister; but it is prudent to keep them a little open, to avoid the edge of the dangerous bank that fronts the coast. In standing to the southward, the north point of Plantain Island must be kept at least a ship's breadth open with the south point of Iron Island, to avoid a bank which lines the south side of the channel, from the Island Madramacan to the eastern part of Plantain Island. Clearing the dangers.

Ships being off Point Tavoy or the Moscos Islands with a northerly wind, should steer for the north end of Tavoy Island, in which track they will have various depths from 20 to 15 or 13 fathoms usually over a mud bottom, until near that part of the island: they ought then to proceed by the inner channel on the east side of Tavoy Island, keeping Inner Channel.

* The beacons are crowned with bamboo wicker-work, white-washed, and are placed in sandy ground, liable to be washed away; buoys are, therefore, kept ready to replace them.

nearer to the islets that lie contiguous to it than to the extensive rocky bank that fronts the main, having on the edge of it only $1\frac{1}{2}$ or 2 fathoms, particularly opposite the easternmost part of Tavoy Island, where the channel is about 4 miles wide, with soundings of 10 to 16 fathoms irregular, near the islets at the east side of Tavoy; but the depths throughout this channel decrease gradually to 5, 4, and $3\frac{1}{2}$ fathoms towards the edge of the bank that fronts the main. There is a small island, called the Bank Canister, not far from the shore bank, and opposite to the southern part of Tavoy Island; some other islands with reefs lie on the edge of it farther to the S. Eastward, then Long Island, formerly mentioned, with other islets and reefs between it and the mouth of Mergui River.

Betwixt the projecting eastern part of Tavoy Island, and the group of Isles on the north side of it, and opposite to the highest north peak, there is formed a bay or harbour having depths of 8 and 7 fathoms, to 4 fathoms in its southern curvature near the shore.

Passage from Mergui in either monsoon.

DEPARTING from MERGUI in the N. E. monsoon, ships ought to pass through some of the channels between the north end of the Great Andaman and Alguada Reef, whether bound to Bengal or the Coromandel coast, and conform to the directions already given for sailing from Rangoon Bar in this monsoon; but if February is commenced, those bound to the Coromandel coast ought to proceed by the channel to the southward of the Little Andaman, and make sure to fall in with the land to the southward of their port, for southerly winds then begin to prevail, with a current setting along the coast to the northward.

Ships bound to Achen, or Malacca Strait, after rounding the outermost islands of the Archipelago, may, in the former case, steer direct for the Golden Mount; and if bound to Malacca Strait, they may steer for the Seyer Islands, or the south end of Junkseylon, or direct for the Nicobars, if bound there.

If a ship leave Mergui in the S.W. monsoon, she should take every advantage to work to the westward clear of the islands, and pass through the Cocos or Preparis channel, if bound to Bengal. She must stand to the southward when she can clear the islands, if bound to Malacca Strait, Achen, or the Coromandel coast, and follow the directions given for sailing from Rangoon Bar in the S.W. monsoon. If a ship find difficulty in getting to the westward of the islands, she might venture to pass inside the principal groups, between them and the main, where a continued channel extends to Junkseylon, inside the Tanasserim, Aladin, and Seyer Islands, with various soundings from 5 or 6, to 20 fathoms. There is good anchorage under many of the islands, and it is best to keep nearer to them than to the main, but attention to the lead and a good look-out will be proper.*

Captain Corstorphine observes, that ships departing from Tavoy or Mergui during the S.W. monsoon, are liable to experience considerable difficulty in obtaining an offing; a favourable opportunity ought, therefore, to be embraced in sailing from either of these places; and if the weather become tempestuous, it will be prudent to work to windward, with the anchorage of Tavoy Point or that under Tavoy Island open, until sufficient offing is made to be enabled to weather the islands of the Mergui Archipelago, if bound to the southward; or of reaching the coast of Ava to the westward of Rangoon River, if bound to the northward.

The same navigator left Mergui in the Ernaad, August 8th, 1827, bound to Madras,

* Captain Ross's Survey of these islands, from Tavoy to Junkseylon, in three sheets, sold by Messrs. Allen and Co., Leadenhall Street, ought to be in the possession of those who have occasion to navigate among them.

passed close to Iron Island, between it and Tavoy Island, on the following day, and then between the Canisters. On the 14th, passed to the eastward of Narcondam Island; saw the Golden Mountain on the 21st, bearing S.W. by S.; on the 23rd, passed between Pulo Malora and the coast, and at 8 P.M., passed the north end of Pulo Brasse. From hence, steering W. by N. and W. by N. ½ N., with the wind at S.W., at 4 P.M. 24th, saw the low south extreme of the Great Nicobar Island bearing N.N.W.; and at 8 P.M., when it bore about North 8 or 9 miles distant, sounded in 32 fathoms, white sand and coral. The wind was mostly between S.S.W. and W.S.W. in crossing the bay, with which stood usually on the larboard tack, excepting about 2½ days stood to the southward, in order to preserve the windward position, and on the 7th September arrived at Madras. *The Ernaad's passage to Madras.*

THE GREAT TORRES are the westernmost islands of the Archipelago; they are two contiguous high islands lying East and West of each other, with some small islets near them. The centre of the western island is in lat. 11° 48′ N., lon. 97° 28′ E. *Torres Islands.*

Little Torres Islands, about 3 or 4 leagues S. by E. from Great Torres, are a group of three or four small straggling isles.

Black Rock lies in lat. 11° 23′ N., about 9 leagues S.S.E. from the westernmost or Great Torres Island, about 6 leagues distant from the nearest islets to the eastward; and another rock, called Nearchus Rock, lies in lat. 11° 42½′ N., lon. 97° 54′ E., 3 leagues to the westward of Bentinck Island; it is covered at high water, with depths close around it of 35 to 31 fathoms. *Black and Nearchus Rocks.*

The following account of the Archipelago is given by Captain Ross as an accompaniment to his chart.

The islands of the Mergui Archipelago extend from Tavoy Island, in lat. 13° 13′, to the Sayer Islands, in lat. 8° 30′ N., and in some parts lie 60 miles off the main land. These islands are usually high, covered with large trees, thick underwood, difficult to penetrate, and scarcely an acre of level ground on any one island fit for cultivation, which may account for their having no inhabitants. *Captain Ross's account of the Archipelago.*

Malays, and a few Chinese from about Penang, visit the Archipelago annually, to collect edible birds' nests, found more or less in almost every little rocky island. Trepang, Biche de Mer, or Sea Slug, may also be an object of search, but it must be scarce, there being no extensive coral shoals. The proas from Penang and the Straits may be nearly 100; they are too small to carry cannon, and they avoided us, which shyness might arise from their trespassing on the rights of those who farm the collection from Government.

On the beaches of several islands, the marks of the deer and hog were seen, also a foot print, said to be the tiger's, but none of these animals were met with; on St. Matthew Island, marks of the elephant or tapir were seen.

The islands rest on a rocky basis, and on many of the rocks wholesome oysters abound; also good fish, although cat-fish only were caught, almost daily, sufficient for a fresh meal.

There are many small barren rocks amongst the islands of the Archipelago, usually with deep water near them, but few hidden dangers were found.

The northerly, or fair weather monsoon, commences on this coast about the middle of October, at which time the wind hangs much at East, occasionally blowing fresh. In December, about noon, the sea breeze sets in from N.W., veering to North about sun-set, and by midnight the wind is from E.N.E. or East, at times blowing strong between sunset and 11 A.M.: therefore, by keeping near the islands, a ship will get *Winds and Weather.*

rapidly to the northward, whereas, in the offing, the wind is chiefly from N. N. E. to N. N. W. In March, the sea winds set in from the southward of West, with light winds and calms in the offing; on two occasions, in February and March, we made but 8 or 10 miles per day, from very light weather experienced between Cabosa and Negrais, with a drain of current to the southward. In April, the afternoon becomes squally with the wind at East, and much thunder and lightning amongst the islands, but the southerly or rainy monsoon does not set in until about the middle of May, after which the Archipelago is subject to very squally weather for successive days and a deluge of rain; judging, however, of the weather by the Nearchus's log-book, which vessel was the whole rainy monsoon of 1818 amongst the islands, it appears that a vessel may easily beat to the southward within the islands, as the Nearchus frequently experienced the wind from S. E. and had several successive days of fine weather.

Tides. On the northern part of the coast, between Tavoy and Martaban Rivers, the tide is much stronger than it is to the southward in the Archipelago. About Martaban its velocity on the springs is frequently 7 knots per hour, making it dangerous for a vessel to approach that part of the coast without good ground tackling. In the S.W. monsoon, when blowing strong on the springs, shelter may be taken in safe anchorage behind Calagouk Island until the weather becomes moderate. In the Archipelago the rise and fall of spring tides is from 13 to 15 feet, and the greatest velocity experienced was 3 knots per hour, depending on the direction of the channels; high water on full and change of moon, from 10 to 11 hours amongst the islands. In the offing the flood sets from the westward; the direction of the stream within the islands is governed by the channels, but if broad and clear, the ebb runs from East and the flood from West. The influence of the tides will probably not be felt above 4 or 5 leagues from the land, and if within the influence of regular tides, the lines of strong ripplings common on this coast are not felt. At a little distance westward of the islands and southward about Junkseylon, in calm weather during the N. E. monsoon, those strong ripplings extend in long lines of direction parallel to the coast, and move past a vessel towards the land at the rate of 7 or 8 miles per hour, without her being carried along with them. They frequently break high, are dangerous for small boats and alarming to strangers: they come in quick succession on the flood tide inshore, and disappear on the ebb.

Fresh water. In the fair season, when no rain falls for several months, many of the mountain streams become dry, and fresh water is not easily procured. Hastings Harbour affords but a small supply at such times. At the following places fresh water has been obtained in the driest part of the season, viz. at two stations on the east side of Tavoy Island; one just within the small group of islands near the north extreme, the other near a small pagoda abreast of a small island near the south extreme. In King Island Bay, on the western shore, about 2 miles from the west point of the entrance. On the west side of Domel, at some sandy beaches well within the straits which divide Domel and Bentinck Island. On the west side of Sullivan Island, at beaches nearly under the highest hill of that part, there is a plentiful stream in the bay, having a large white rock in front; this is the most convenient watering place for a passing vessel in the N. E. monsoon, being easy of access, with good anchorage. On the east side of St. Matthew Island, in a bay to the S.W. of the Dolphin's Nose; and on the east side of Calagouk Island, there is a well of good water near the highest hummock.

Passage into Bentinck Harbour. If a ship be to the southward of Torres Islands, and in want of shelter within the Archipelago, she may pass near to the small group of three islands situated 10 miles S. S. E. $\frac{1}{2}$ E. of the Great Western Torres. The southernmost of the small islands is

in lat. 11° 37½′ N., visible at 4 or 5 leagues' distance; by steering East from it 22 miles, a small group of four rocky islands will then be about 5 or 6 miles to the southward of you, and Nearchus Rock distant about 5 miles to the northward: this rock is nearly covered at high water, but always shews breakers: the south extreme of Bentinck Island will bear about East from you, distant 4 leagues. Steer to pass about 3 miles to the southward of this island in order to avoid some small isles near it, and a reef of rocks, always dry, distant about 2¼ miles to the southward of the point; in this run the depth will be from 45 to 23 fathoms. When abreast of Bentinck Island, Domel, which is high mountainous land, will bear East from you, and a group of islands named the Sisters will bear to the southward, distant about 10 miles; steer up the strait to the northward for the South Passage Island, 8½ miles distant from the S. E. point of Bentinck Island, and anchor to the northward of it in 7 or 8 fathoms in Bentinck Harbour, where you will be land-locked and secure from all swell in good holding ground, mud and sand. The northern passage out of the harbour is between West Passage Island and a small islet crowned with a tuft of trees, named Cap and Feather. This passage is 2 miles wide, having the greatest depth of water, 5 and 6 fathoms, near the Passage Island, decreasing to 3¾ fathoms near the Cap and Feather.

If needful to communicate with Mergui, steer to the northward and pass on the west side of Christmas Islands, distant 10 miles from the Cap and Feather, then steer E. N. E. towards two high peaked islands, where you may anchor in 7 or 8 fathoms to the N. W. of these, and Mergui will be about 6 leagues to the N. E. of your anchorage.

Passage from Bentinck Harbour.

To proceed from Bentinck Harbour to the southward, pass between the Sisters and Bushby Island, then between the Father and Son and Owen Island, into Forrest Straits: there are no invisible dangers in this route, but some small rocky islands lie on the east side of the Sisters, and several dry rocks about 1¼ miles to the northward of the Son; yet the soundings in some parts are irregular, and the bottom changeable from mud and sand to shells and coral when there are overfalls, but never less than 9 fathoms was got in mid-channel after passing to the southward of Bushby Island.

Forrest Passage.

Forrest Passage, in lat. 11° N., is the best leading into the Archipelago, and if approached on that parallel, the Island Clara will be the first land seen, which is high, and having small peaks, the southern one very sharp, like a sugar-loaf. Distant about 1¼ miles off the northern part of Clara there is a small isle and a rock, which pass about a mile to the northward, and steer towards the north point of Sullivan Island, distant 4 leagues to the eastward. The Sisters, situated about 7 leagues to the northward of Clara, will be seen, also the Father and Son, two high rocky islands, of barren appearance, lying about 4 leagues N. N. W. of Sullivan Island: steer to pass off the north end of Sullivan Island about 1½ miles; nearer to it is uneven ground with strong eddies; if blowing strong from S. W., haul to the southward to pass between Two Hill and Olive Island on the west side, which are close to Sullivan Island, and High Island on the other side, which is 5 miles to the eastward of them. In this route the depth is about 40 fathoms 3 leagues to the westward of Clara and 30 fathoms when North of it, to 18 or 20 fathoms off the north end of Sullivan Island, where there are occasional overfalls. If merely seeking shelter, you will find a very smooth anchorage after passing a litle way to the S. E. of Olive Island, in 6, 7, or 8 fathoms.

In Forrest Passage, in the N. E. monsoon, it sometimes blows so strong that a ship will be unable to gain ground.

From the north part of Sullivan Island to the lower part of St. Matthew Island, Forrest Strait is land-locked and secure against any sea of consequence.

In passing to the southward from the N. E. part of Sullivan Island, observe that the Half-Moon Shoal, covered at high water, lies 3 miles to the northward of the eastern point of Sullivan Island and a little more than half a mile off shore, being steep to, with 8 or 9 fathoms near it at low water. The eastern extreme of the Dolphin Islands and east extreme of Olive Island in one is a close mark to clear the N. E. part of the shoal; and the eastern point of Sullivan Island touching Bold Promontory of the same island, 3 miles further South, leads half a mile clear to the eastward of the shoal. A small rocky reef, covered at half-flood, lies on the east side of the strait fronting an opening between the islands, and it lies 7 miles nearly E. by S. from the point or foreland of Sullivan Island, and 3 miles to the southward of a high barren rock on the eastern shore: near this reef the depth is 3 fathoms at low water spring tides.

The channel to the eastward of the islands called Gregory Islands in the chart is preferable, as the depths are moderate for anchorage, with good holding ground; and the tides run North and South, about $1\frac{1}{2}$ miles per hour on the springs.

The bottom in the channel to the westward of the Gregory Islands is uneven, with patches of coral, and about a mile from the east side of Steep Island there is a rocky shoal, nearly dry at low water; the extreme of East Foreland and Bold Promontory to the southward of it in one is nearly upon its N. E. edge.

Six small islands lie in mid-strait between Sullivan Island and the eastern shore. Crichton Island, the northernmost, has a rocky reef projecting to the northward and to the south-west, with 14 fathoms water near its eastern side. The other five islands, called Gregory Islands, are very rocky around, particularly the four nearest to Crichton Island.

All the country boats passing near the shore to the eastward of the Gregorys affords cause to believe it to be a part of the continent.

Several small brigs, of easy draft of water, and junks, trade between Penang, Mergui, and Tavoy; their route is usually through Forrest Strait, to the northward, passing to the eastward of Owen Island; when they get abreast the middle of Domel, the passage becomes very shallow, being nearly dry all across, with a narrow creek through the sand, which creek lies on the west side of the channel near the Domel shore.

Another clear and safe entrance into the southern part of the Archipelago, for ships going to Hastings Harbour, is in lat. 10° 15′ N. by passing to the southward of the Southern Twin, and leaving Horsburgh Island in lat. 10° $11\frac{3}{4}$′ N. to the southward, and Loughborough large group of islands to the northward: this channel is quite safe, nearly 6 miles wide in the narrowest part between Cavern Island and the northern islands of the St. Andrew group; the course is about East, and a ship may pass between St. Luke and Russel Islands, to enter Hastings Harbour.

Hastings Harbour.

Hastings Harbour is very smooth and secure during both monsoons, but care is required in entering by the Eastern Channel, for a dangerous patch of rocks lies about a third channel over from St. Matthew Island towards the S.W. point of Hastings Island; also a rocky reef off the south point of Hastings Island, for which the lead gives no warning. The Investigator was left dry on the latter, on the day of full moon in March, and obliged to be lightened, by taking out her guns and starting the water, before she floated on the next tide.

The Nearchus and Minto surveying vessels passed through the Eastern Channel often, and never discovered these reefs; neither in boats frequently, nor in working in and out of the channel in the Investigator, was the small reef discovered near St. Mat-

thew's, until afterwards in that vessel two casts of the lead were got on it, in $2\frac{3}{4}$ fathoms, and it was then examined in the boats. The surveying vessels traversed all over Hastings Harbour, and discovered no other dangers.

The strait abreast of Hastings Harbour becomes contracted by a shoal bank extending from the islands on the eastern shore; in passing thereabouts keep nearest to St. Matthew.

PINE TREE ISLAND, in lat. 10° 20′ N., has a dangerous reef on its west and S.W. sides, projecting about a mile; on the west side of Cat Island, which is the next to the northward, there are several rocks; about 5 miles S. E. from Pine Tree Island lie the Five Islands, surrounded by a reef, and 2 miles to the westward of these, the island South-east Hump is situated. The soundings inside, and amongst the islands lying between St. Susannah and St. Matthew, are in general from 9 to 20 fathoms, but not always regular. Pine Tree Island.

ST. MATTHEW, or ELEPHANT ISLAND, about $5\frac{1}{2}$ leagues in length, or from lat. 10° 3′ N., extending S.W. by S. to 9° 49′ N., is about 5 or 6 leagues from the continent, and may be seen at a great distance, the highest peak in the middle of the island being nearly 3,000 feet above the level of the sea, and is visible 18 leagues. At the north part of the island is HASTINGS HARBOUR, called also Gages Harbour, being a spacious bay formed by the shores of St. Matthew and St. Luke Islands on the South and West, having Hastings Island on the N. E. It has soft bottom, from 5 to 10 and 11 fathoms, and is sheltered from all winds by the surrounding islands. Captain Low, of the Madras army, celebrated for his scientific pursuits, and knowledge of the language and character of the Siamese and adjacent nations, touched here in 1825; he describes it as a very spacious harbour, capable of containing the largest navy in the world. Hastings Harbour has lately been surveyed by Captain Ross, the Company's Marine Surveyor, who makes the centre of the harbour in lat. 10° 6′ N. There are two channels into the harbour; the northern one to the westward of Hastings Island being the best; for in the eastern channel formed between the south point of Hastings Island and the N. E. point of St. Matthew there is a 2 fathoms rock, rather more than mid-channel towards the latter, and a coral shoal distant 1 mile, about E. by S. from the south point of Hastings Island, which shoal bears N. 1° E. (*true*) from the White Rock that fronts Fish Harbour. The tide in Hastings Harbour is very weak; high water at 10 hours 40 minutes on full and change of the moon, and the rise is 13 or 14 feet. At the S.W. angle of the harbour, between the south point of St. Luke Island and the north-west part of St. Matthew Island, there is said to be a narrow passage or inlet from seaward, called Rose Passage, about two-tenths of a mile broad, which might be used by a ship going out of the harbour in the N. E. monsoon, when the water is smooth and clear, and the wind fair. The shores appear to be lined with rocks on both sides. Hastings Islands abound with wild hogs, pigeons, and fresh water, when the season is not very dry. St. Matthew Island. Hastings Harbour. Tides.

Fish Harbour lies between the N. E. point and the East point (called the Dolphin's Nose) of St. Matthew Island, affording shelter for boats or small vessels. On either side the White Rock, off the entrance of this little harbour, there is a safe passage; but an extensive flat of sand and mud fronts the main in this part, with numerous small low islands. Fish Harbour.

THE ST. ANDREW GROUP, consisting of several islands, extends from lat. St. Andrew Group.

10° 1′ to 10° 12½′ N., the westernmost of which is 6 leagues to the westward of St. Luke Island, having a safe channel, called Investigator Channel, on the north side of the group, also a safe channel, betwixt the eastern side of the group and isles that lie close to the west side of St. Luke Island. To the northward of the St. Andrew Group there is another extensive group of islands, the westernmost of which is in lat. 10° 28′ N., lon. 97° 43′ E., Bird-nest Point, the south extremity of this group, being in lat. 10° 18′ N., lon. 98° 1′ E. Russel Island, about 2 leagues to the northward of the north entrance of Hastings Harbour, is high, with a reef off its N.W. end, and some small isles contiguous, with others in the harbour's entrance, and adjacent to Hastings Island on the outside there are several other islands.

On the continent, opposite the north end of St. Matthew, there is a river and a group of islands near the shore; several other rivers fall into the sea between it and Mergui, and the whole of the main is generally of moderate height. About the middle of the eastern coast of St. Matthew there is a bay directly under the high land, formed by a point of land on the north side, and Tongue Island to the southward; here is a cascade of fresh water, and good anchorage on the north side of the island in 8 or 10 fathoms.* To the southward of St. Matthew, a group of islands and rocks extends to the distance of 18 miles in a S.W. by S. direction, having 17 and 18 fathoms water near them, decreasing regularly towards the islands near the continent, between which and the group just mentioned there is a safe channel 10 or 12 miles wide; they are mostly high and safe to approach on the outside, but there are some reefs in the centre of the group, with rocks above water in some places, particularly to the eastward and southward of the south point of St. Matthew, and between Auriols and Christie Island.

The principal island of the group, South of St. Matthew, is Davis Island, lying 4 miles W. S.W. from its south point; it is about 10 miles in circumference, and may be seen at the distance of 7 or 8 leagues. There are three small islands to the westward of Davis Island, and between 5 and 9 miles distant from it: North Rocky Island, in lat. 9° 52½′ N.; Western Rocky Island, in lat. 9° 51′ N.; and the Haycock, in lat. 9° 40′ N. Auriols Island, the S. Easternmost of the group, is in lat. 9° 38′ N.; and Christie Island, the southernmost, is in lat. 9° 36′ N., and in lon. 98° 0′ E., having an islet near its south point surrounded by a reef; it is 7½ miles W. by S. from Auriols Island. The Haycock lies 4½ miles W. N.W. from Christie Island. These islands are usually known by the name of Aladin Islands.

Roe Bank. ROE BANK was discovered by Captain Roe, in the ship Henry, bound from Prince of Wales Island to Calcutta, July 31st, 1822, at 5 P.M. Rocks were seen under the ship's bottom, had 8½ fathoms; kept sounding, and had 10, 12, 15, and 20 fathoms, then no ground with 80 fathoms line. By this day's observation, made the bank in lat. 9° 59′ N., lon. 96° 50′ E., by account. Although in the latitude of the high island St. Matthew, and the evening clear, no land could be seen from the mast-head: the ship was half an hour in passing over the bank, going at the rate of 2 miles per hour, which makes it about a mile in extent North and South.

Captain Roe, in command of the transport ship Robarts, bound from Rangoon to Madras, again got upon this bank, July 25th, 1825, at 7 A.M.; steering S. S.W. about 3 miles per hour, saw rocks under the bottom, put the helm down, and had ground

* The Princess Royal filled up her water at the Sandy Bay on the north end of the island, where they found wild plantains, plenty of wild yams, and ground rattans of large size. This ship did not anchor, but stood off and on, while watering.

10 fathoms, when in stays; in standing again to the northward to get off the bank, had 10 fathoms, then no ground with the hand-lead, and by the time the deep-sea lead was ready, the ship was in deep water. From this day's observation, made the northern edge of the bank in lat. 10° 2′ N., lon. 96° 45′ E., by chronometer, and it bears West about 75 miles from the southernmost islands of St. Andrew Group. Position.

As this bank is in the track of ships passing between Bengal and the Strait of Malacca, or other eastern ports, it seems strange that it remained so long undiscovered; and although 8½ fathoms was the least water found on it, there may probably be rather less on some patches, as the bank was not fully explored; probably no part of it is dangerous.

Aladin Islands.

CHANCE ISLAND, in lat. 9° 22′ to 9° 27′ N., lon. (the peak) 97° 53′ E., and distant 3½ leagues to the S.S.W. of Christie Island, has a high peak that may be seen 10 or 12 leagues, with some islets contiguous, and rocks above water near its S.E. point: this may be considered as one of the Aladin Islands, although there is a safe channel, about 8 miles wide, between it and the other islands that form the southernmost limit of the group as above described.

Nearly in a line, about mid-way between Chance Island and the Sayers, lies Middle Island, by itself, in lat. 9° 3′ N.; it is high, and may be seen 8 or 9 leagues, and the channel between it and Chance Island has soundings of 32 to 46 fathoms, and is 6 leagues wide.

Perforated Island.

Perforated Island, in lat. 8° 49½′ N., situated 4½ leagues South from Middle Island, and 4 leagues N.E. from the northernmost of the Sayer Islands, is another detached island, thus named* by Capt. David Inverarity, on account of a hole that passes through it. Captain Inverarity, in the ship Chance, worked from Junkseylon, inside the Sayers, Perforated, and Middle Islands, and on the west side of the other groups of the Archipelago as far as Torres Islands, in his passage from China to Rangoon. Perforated Island has soundings about 2 miles inside, from 40 to 50 fathoms, 2 leagues E.N.E. 33 fathoms, and 5 miles S. by E. from it 35 fathoms, to the N.E. of the Great Sayer.

The channel betwixt these islands and the main is 7 or 8 leagues wide, having regular soundings from 20 fathoms off the northernmost Aladin, where it is only 4 leagues wide, to 12, 10, and 8 fathoms near the numerous islands and banks contiguous to the coast, which abreast the Aladin group forms a large bay, fronted by a chain of islands and rocks. Opposite the north end of St. Matthew commences the chain of islands, already mentioned, that lines the coast, and extends about S. by W. to lat. 9° 25′ N. The largest islands of this chain are Saddle Island, in lat. 9° 49′ N., about 4½ miles in extent, and Delisle Island, in lat. 9° 43′ N.: they are separated from each other by an opening 1¾ miles wide, having a 2 fathoms shoal in it, with anchorage of 7 to 4 fathoms inside; but neither this anchorage, nor the other parts of this chain of islands, have been examined sufficiently to shew whether or not any safe harbours exist. About two-thirds of a mile to the S.W. of the south point of Delisle Island there is a rock under water, having close to it 8 fathoms; and about 5 leagues E. ¼ S. from the same point, in lat. 9° 40′ N., there is a high peak on the mainland formed like a funnel. The Sugar Loaves are two islands in lat. 9° 29′ N., lying from 4 to 6 miles off the coast, near each other, in an East and West direction; and about a mile from the south end of the westernmost lies a White Rock and Islet, with Metcalf Island about 2 miles to the S. Eastward, which may be termed the southernmost of this *coast chain*, although about 2 leagues farther south and 4 miles off shore lies a small isle, called Haye Island,

* These islands have lately been examined by Captain Ross, from whose survey their positions have been corrected.

in lat. 9° 19′ N., having a reef projecting $1\frac{1}{2}$ miles to the westward. These islands have generally from 8 to 10 or 12 fathoms water near them, but not always so regular as to be a safe guide in approaching them. About 5 miles to the South of Haye Island there is a deep inlet (where the coast forms a bight, by taking a S.W. direction from the west point of the inlet), about 4 miles, and there forming another point, with a hill on it, in lat. 9° 12′ N., from whence the coast returns to a southerly direction, having about 2 leagues inland a high ridge of land, the north part of which may be seen at 13 or 14 leagues' distance.

Bangri. Bangri, a place of some trade, frequented by the coasting vessels, is in lat. 9° 0′ N., being an inlet to a lagoon or bay, which inlet, on the south side, is bounded by a narrow tongue of sloping land called the Quoin; the point of the north side is low and covered with trees, perfectly level; at the entrance there is a perpendicular rock, and the shoal banks extend 3 miles off, and dry at half ebb, on which the sea often breaks; from these shoal banks at Bangri, Middle Island bears about W. $\frac{1}{2}$ N., and Perforated Island about W. S. W.; the depth of water close to the banks is 3 and 4 fathoms, and $1\frac{1}{2}$ or 2 miles outside it is about 12 fathoms.

Reef. In lat. 8° 54′ N. lies a sand in the centre of a reef, covered at high water, which extends 3 miles N. N.W. and S. S. E., and its outer edge is 3 miles from the shore, with 4 and 5 fathoms water close to it, and 8 fathoms at a mile distance; on the inner part it appears to unite with the shoal bank that extends from Bangri Bar along the coast to the southward.

Papra Strait. From Bangri Inlet the coast takes a direction, first S. by W., then South and S. $\frac{1}{2}$ E., about 14 or 15 leagues to Papra Strait, in about lat. 8° 10′ N., which separates Junkseylon Island from the continent, and is closed up by a reef of rocks at the entrance, over which the sea breaks high in bad weather.

Tides. The whole extent of land bordering the sea from Tavoy River to the Strait of Papra is generally called the Coast of Tanasserim, although the narrowest part of the continent, which separates Siam Gulf from the Bay of Bengal, is sometimes called the Isthmus of Kraw. In the channel inside the Tanasserim Archipelago, the flood usually comes from southward, except opposite to some of the channels between the islands it comes through from West or S.W. according to their direction; and the ebb mostly comes from northward, except where it sets out to the westward in some places betwixt the smaller islands: amongst some of these, eddies and irregular tides prevail; but inside the principal islands the flood sets northward, and the ebb in the contrary direction, from $2\frac{1}{2}$ to 3 miles per hour on the springs, and rises 10 or 12 feet.

Sayer Islands. THE SAYER ISLANDS, although detached like Perforated and Middle Islands, may be considered as the termination to the southward of the Great Chain or Archipelago fronting the coast of Tanasserim; they are not so much elevated as some of the Aladin Islands, but are bold, safe to approach, and may be seen 8 or 9 leagues. By observation at noon, the north island bearing E. by S. about 6 leagues, I made it in lat. 8° 43′ N.: this island is near to the Great Sayer, which is about $3\frac{1}{4}$ miles in extent, but the others are small, and from the north island they extend in a chain nearly South to about lat. 8° $28\frac{1}{2}$′ N. They are about 13 leagues West of Pulo Rajah and the south end of Junkseylon, or in lon. 97° 42′ E., and appear eight in number, with two rocky islets off the S.W. end of the Great Sayer; next to it, the two central and two southernmost islands are the largest of this group. Captain Ross places the North Sayer in lat. 8° 41′ N., and the body of the Great Island in lon. 97° $39\frac{1}{2}$′ E. On the east side of the Great Sayer Island there is anchorage near the shore, although

the depth is considerable; about 6 miles to the East and N. E. of it, and from thence in a line to Perforated Island, there are soundings of 40 to 47 fathoms; a little farther East, and from thence to the main, the soundings decrease gradually in the channel inside these islands, which is from 9 to 10 leagues in breadth: along the west side of Junkseylon soundings are obtained at a moderate distance from the shore, decreasing near it to 8 or 9 fathoms.

Junkseylon; adjacent islands.

JUNKSEYLON, or SALANG ISLAND, separated from the continent by Papra* Strait, extends from lat. 8° 9′ to 7° 46′ N., being 8 leagues in length, and about 3 leagues broad. There is a high regular sloping mountain on its southern part, that may be seen 12 leagues, and is in lon. 98° 20′ E., or 2° 1′ West from the fort of Prince of Wales Island by chronometers,† measured by me at different times, and at another time 17° 58′ East from Madras Flagstaff. On the meridian of this mountain and the south end of Junkseylon, in lat. 7° 36′ N., lies a high woody island, called Pulo Rajah or Pulo Taya; and 5 miles South from it there are two other small but moderately high islands, called the Brothers, with an islet near them. Between these islands and others contiguous to the south end of Junkseylon the channel is safe, with soundings from 20 to 35 fathoms, and it may be adopted by ships coming from the westward; but the great channel to go into the bay is on the east side of Pulo Rajah and the Brothers.

The western coast of Junkseylon stretches nearly North and South; on the east side there are several bays, and the chief one, where the harbour is situated, about 4 leagues from the S. E. point of the island, is opposite to the small river, where Tha-rooa, the principal town, stands, about $1\frac{1}{2}$ miles up the river; Tha-rooa signifying the " Landing Place." The great passage into the harbour is on the east side of the two Lalan Islands, which lie off the entrance, in lat. 7° 56′ N.; and the anchorage is to the N.W. of them in 4 or $4\frac{1}{2}$ fathoms, mud, with the Little Lalan or northernmost island E. by S. 1 mile, the mouth of the river West or W. $\frac{1}{4}$ N. 3 or 4 miles, and the east point of the large island Pulo Coco, bounding the south side of the harbour, S. $\frac{1}{2}$ E. There is another passage into the harbour, with 5 fathoms water, between the Great or South Lalan, and a small islet, called the Cap and Feather, off the eastern point of Pulo Coco. The great passage or north entrance is bounded on the north side by an extensive reef of rocks, dry at low water, which bears North from Little Lalan, distant 2 miles. It is high water at 10 hours on full and change of moon; the rise of tide 11 or 12 feet; it runs about 2 miles per hour to the northward, between Junkseylon and the large island Pulo Panjang to the eastward, and the ebb sets to the southward with equal velocity. At this place, water, poultry, and various articles of refreshment, may be procured in abundance, and formerly it exported a considerable quantity of tin. The natives here have been *generally* hospitable to strangers when it belonged to the Malay Rajah of Quedah, but it has been forcibly occupied by the Siamese of Ligor. Exclusive of Terooa Bay, other harbours are formed in the north part of the gulf between the islands Junkseylon and Panjang, particularly among the Nacavsa Islands, about 5 miles to the northward of the Lalan Islands, also in the entrance of Papra Strait; but the depths inside of that strait being generally from 2 to $3\frac{1}{2}$ fathoms, without any safe passage at its western entrance to

* Called Pak Pra by the Siamese, signifying the " Mouth of the Deity."

† Captain Blair made the same mountain 2° $1\frac{3}{4}$′ West from the fort of Prince of Wales's Island by chronometer; and he made the Lalan Islands in lon. 98° 23′ East, by an eclipse of the 1st Satellite of Jupiter, Variation 2° 15′ East in 1788.

seaward, prevents it from being frequented by trading vessels. The strait between Pulo Panjang and the coast is called Callat Leheree, *i. e.* Throat Strait, it having only two feet at low water in the shoalest part. The south end of Pulo Panjang, and the islands interspersed between it and the south end of Junkseylon, are safe to approach, with soundings from 10 to 15 fathoms amongst them, decreasing towards the shores on either side the entrance of the gulf. Pulo Panjang, *i. e.* Long Island, is called Ka Yau by the Siamese, who now possess Salang and the whole of the country from Tanasserim round the coast to Queda, called by them Kedda, against which the Rajah of Ligor sent a strong force of Siamese in 1822, who made a conquest of the Rajah of Quedah's dominions, which forced him to take refuge at Penang, and place himself under the protection of that government.

THE ANDAMAN ARCHIPELAGO.

THE ANDAMAN ARCHIPELAGO consists of the three principal islands, which give the name to the group, together with the smaller islands and rocks lying on and near the meridian of 93° E., and comprehended between the parallels of 10° 25′ N. and 15° 0′ N.

Preparis.

PREPARIS ISLAND, the northernmost of the group, extending nearly N. by E. and S. by W. from lat. 14° 49′ N. to 14° 56′ N., being 7 or 8 miles long and 2 broad, and in lon. 93° 40′ E., or 33 miles to the westward of Cape Negrais by chronometer, is of moderate height, sloping gradually all round towards the sea, covered with wood, steep to on the east side, having 7 fathoms water near the shore. At the north end there are two islets, called the Cow and Calf, apparently steep to, and on the west side two other small islets, on the great reef that fronts the west side of Preparis, and that projects 3½ or 4 leagues from its southern extremity, with part of the rocks visible above water.

This reef is of greater extent and more dangerous than hitherto supposed, as will be seen by the following remarks:—

Dangerous Reef of Preparis Island.

When Captain Balston, of the country ship James Drummond, August 13th, 1815, steering to the S. E. to check the N. E. current, and to give a berth to the reef off the south end of Preparis Island, a rock above water was seen bearing S. E., and shortly after, a flag displayed on it: the cutter was sent, and after passing through a great surf returned, with Captain Daniels, Mr. White, first officer, and eight men belonging to the brig Athena, which had been wrecked three days previously on this reef.* In steering to the S. E. after saving these people, breakers were seen about 5 or 6 miles distant from the rock on which the brig was wrecked, so that this reef extends much farther from the south end of Preparis Island than is generally represented; I made the

* Eighteen men had left the rock on two small rafts before the 13th of August, in hope that the N. E. current would drift them to the coast of Tanasserim; but as they had neither a sail, oars, nor provision, they probably all perished.

northern extreme of the island in lat. 15° 7′ N.,* the southern extremity of the breakers in lat. 14° 44′ N., but the extent of the breakers to the eastward was not visible in the evening from the mast head. The Company's ship Ernaad, from Madras, bound to Rangoon with troops, was nearly wrecked by striking on this dangerous reef on the 21st August, 1826.

Captain Nairne passed near the reef in the General Kyd, October 8th, 1817, and is of opinion that it extends 12 miles to the southward of Preparis Island, and that probably the water is shoal much farther out. The breakers ran very high at this time. It is, therefore, only on the east side of Preparis Island that large ships can safely anchor in 12 or 14 fathoms; a small vessel might anchor in 8 or 9 fathoms with the extremes of the island from N. 2° E. to S. 65° W., the extremity of the reef projecting from the south end of it S. 35° E., and the two islets off the north end N. 3° E. to N. 8° E. a little more than half a mile from the shore. A few paces from a fine sandy beach formed between two ledges of rocks there is a pond of fresh water, very convenient for watering, where boats may land with safety; it is in one with the highest part of the island, bearing N.W., which is not inhabited. About two miles from the east side of the island there is 24 fathoms, and close to the reef at the southern extremity 30 to 36 fathoms; farther to the southward, no ground is got with 100 fathoms line in mid-channel between it and the Cocos Islands; but when the latter are approached within 2 or 3 leagues, bearing to the S. S. W., there is ground from 36 to 32 fathoms. In the channel between Preparis and Alguada Reef, the soundings vary from 40 and 44 fathoms near mid-channel, to 24 or 22 fathoms near the former, and 17 or 18 fathoms near Alguada Reef.

GREAT COCO, bearing from Preparis Island S. by W. ¼ W., distant 46 miles, and extending from lat. 14° 2′ N. to 14° 8′ N.,† is in lon. 93° 26½′ E. by chronometer and lunar observations. It is nearly 6 miles in length North and South, and 2 miles in breadth, covered with trees, some of which near the sea are coco-nut trees; the island is a little uneven in its contour, and being of moderate height, may be seen at the distance of 6 or 7 leagues. Off the north end there are two islets, called the Table and Slipper, from their appearance; another islet is connected with the south end by a reef of rocks, just covered at high water, that projects a considerable way into the sea. A ship may anchor on the east side of the Great Coco in from 14 to 20 fathoms, also on the west side; but there is little inducement to land here, firewood being the only article procurable, and perhaps a little water in some parts, by digging pits. Great Coco.

LITTLE COCO lies about 3 leagues to the S.W. of the Great Coco, the centre of it being in lat. 13° 58½′ N.; it is about 2½ miles long North and South, and half a mile broad; it is low, or rather moderately elevated, of an even appearance, and may be seen 6 or 6½ leagues. Trees cover it in every part, some of which, facing the sea, are coco-nut or palmyra trees, and there is said to be fresh water on the east side, where a ship might anchor in moderate depths; at the N.W. end there is also anchorage with regular soundings towards the shore, and a fine sandy bay on the west side where boats may land, but no fresh water is procurable there. From the south end of the island a reef projects to a considerable distance, which ought to be avoided in passing, particularly in the night; and this reef seems to extend farther out than Little Coco.

* This is considerably to the northward of the position assigned to that part of the island by other navigators, and may probably not be very correct.

† By Captain J. Ritchie; but Captain Hall made the Great Coco in lat. 14° 11′ N., lon. 93° 25′ E.

formerly supposed, as will be perceived by the following extract from the journal of Captain Forbes, of the ship James Sibbald, which proves the existence of the reef, and that it extends about 4 or 5 miles from the island. March 17th, 1827, at 5 P.M., centre of Little Coco Island N. N. W., off shore about 3 miles, shoaled suddenly to 10 fathoms; bore away to the southward, finding we were on the edge of the reef, and had soundings from 10 to 20 fathoms, with sudden overfalls of 5 and 6 fathoms. This reef appeared to extend about 5 miles from the island in a southerly direction, and seemed to be dangerous, for the coral bottom was frequently seen, and some rocks, even with the water's edge, about 3 miles from the island. These islands and Preparis abound with monkeys and squirrels: larger animals have not been seen upon them. Around, and between the Cocos Islands, the soundings vary from 8 to 30 fathoms, deepening as the distance from them is increased to the East or westward suddenly to no ground. The Margaret passed through the channel between them April 25th, 1802, and the least water she had was 8 fathoms. The Company's ship Nassau went through this channel in 1779, and had regular soundings of 24 to 36 fathoms.

Channel between the islands.

The Bridgewater, Captain Manderson, August 9th, 1825, from Bengal, bound to China, went through the channel between the Great and Little Cocos, and carried regular soundings of 30, 25, and 21 fathoms, in passing nearest to the Little Coco, with the wind at S.W. The General Kyd, Captain Nairne, and Hythe, Captain Wilson, also passed through this channel, after the Bridgewater, and on the same day: the channel appeared about 3 leagues wide, and clear of danger.

Channel between Little Coco and Landfall Island.

The channel between the Little Coco and Landfall Island, off the north end of the North Andaman, is about 6 leagues wide, and hitherto thought to be very safe,* with soundings 30 or 35 fathoms near the former, and from 40 to 56 fathoms about mid-channel, decreasing to 20 and 18 fathoms near Landfall Island and the ledges of rocks to the eastward of it: the bank of soundings is about 4½ or 5 leagues broad East and West, the bottom mostly coral, but in some places it is sand and mud. During the N. E. monsoon, the current sets frequently through this channel to the N.W.; in the S.W. monsoon it sets mostly to the eastward, although in fine settled weather, tides prevail among these islands, the flood setting to N. N. E., and the ebb to the S. S. Westward.

Current and Tides.

Great Andaman.

The three principal islands of the group, extending from Cape Price, in lat. 13° 34′ N., lon. 93° 9′ E., to the S. E. point, in lat. 11° 30′ N., lon. 92° 56′ E., in a S. ½ W. direction, although generally considered as one large island, under the name of the GREAT ANDAMAN, it is in reality composed of three islands, separated from each other by two narrow straits, one in about lat. 12° 50′ N., and the other in 12° 10′ N.; there is thought to be depth sufficient in these straits for a vessel not drawing much water, but they are too contracted to be navigated except by boats, or very small vessels.

THE NORTH ANDAMAN is about 44 miles in length from North to South, and 14 in breadth; its north end is surrounded by a group of small islands and rocks, the principal of which is Landfall Island, in lat. 13° 39′ N., the east point of which

* But Captain Henderson and Captain Bennett, both experienced commanders in the country trade, have informed me that in 1809 the brig Daphne, although drawing only 10 feet water, struck on a sunken rock which lies 6 miles South of the Little Coco. An extract from the Daphne's journal, lately received from Captain Ashmore, states that the S. E. end of the Little Coco bore N. by E. about 5 miles when she struck on a small rock, and saw the rocks under water alongside; at this time the surf on the shore of the Little Coco was not visible from the deck.

bears nearly North from Cape Price, distant 3 miles. It is the largest of these islands, of level aspect, and may be seen about 6 leagues; there is off its eastern point an islet called East Island, and both are encompassed by a reef, having 3 fathoms on its western verge, which should not be approached under 18 or 20 fathoms in any part, particularly in the night, or in thick weather. Islands.

About 6 or 7 miles to the W. S. W. of Cape Price, is Cape Thornhill, the N.W. extremity of the island, off which, at a small distance, there are two islets called Cliff and Reef Islands, and 3 miles to the northward of these lies West Island.

The channel between Landfall Island and the north end of the Andaman should not be attempted, being dangerous and very narrow,* having in the middle of it Cleugh Reef, with rocky ground and overfalls on either side that shoal. The soundings in this channel vary from 18 to 10 fathoms in the western and middle parts, increasing to 25 and 30 fathoms at the eastern entrance. The flood sets through to the eastward and the ebb to the westward, high water about 5 hours on full and change of moon. Channels.

Ranger Ledge bears East about 3 miles from East Island, and close to it on the outside lies Jackson Ledge, both dangerous shoals; to the S. Eastward of these about 7 miles, and nearly 3 leagues E. by S. from Cape Price, lies Union Ledge, in lat. 13° 20′ N., another dangerous shoal. Between the Andaman and these shoals the bottom is mostly rocky with great overfalls; ships ought, therefore, to pass always outside of the shoals in deep water, for at a small distance to the eastward of Jackson Ledge there are from 18 to 20 fathoms, and near Union Ledge 30 and 40 fathoms. The edge of the bank of soundings extends only about a league outside this ledge, rendering the approach to it dangerous in the night, or in thick weather when the land is not visible. Dangers.

Port Cornwallis, on the east side of the North Andaman, in lat. 13° 18′ N., about 16 miles to the southward of Cape Price, is an excellent bay or harbour, extending about 2 leagues into the land in a N. Westerly direction, and in breadth about 1 league. There are in it several small islands, of which the most conspicuous is Chatham Island, about 2 miles long; it contains also several creeks and coves; high water at 4½ hours on full and change of moon. The entrance is about three-quarters of a mile wide, with 18 fathoms in mid-channel, formed between an islet at the north point and a reef projecting from the south point; the depths within decrease from 12 regularly to 7 and 6 fathoms, and the least water in the harbour is five fathoms. To the northward of this harbour, near the shore, there is a group of islands surrounded by a reef; and about 4 or 5 miles to the southward lie the Ragged Islands, being four islets contiguous to the shore, with regular soundings, 13 and 15 fathoms near them, and 25 to 29 fathoms about 3 miles' distance. Port Cornwallis.

This excellent harbour being land-locked on every side, and surrounded by lofty mountains covered with impenetrable forests, is very secure from all winds, and the scenery is here uncommonly grand. A colony from Bengal first settled at Port Chatham near the south end of the island in 1791, which was removed, by advice of Admiral Cornwallis, in 1793, to Port Cornwallis; but the impenetrable forests being unfavourable to cultivation, and incessant rain in the S.W. monsoon rendering the place unhealthy, the colony was withdrawn after a few years' residence on the island.

* It is sometimes called Pondicherry Passage, the French ship of that name having forced her way through it in 1750. The Admiral Pocock, Captain Cleugh, also went through it in December, 1764; and Captain Heathorne passed through it not long ago, but it ought not to be attempted except in a case of great necessity.

The inhabitants of these islands are negroes of small stature, very black, but strong and well shaped; they subsist chiefly on what fish they kill with darts, or shell fish procured among the rocks; but in tempestuous weather these are not always obtained, and hunger and cold sometimes deprive those miserable savages of existence.

To approach Port Cornwallis from the westward.

Ships coming from the westward with a fair wind, intending to stop at Port Cornwallis, ought to keep 4 miles from West Island and Landfall Island, and at least 2 miles from the north point of the latter; and having steered East 9 or 10 miles, they may haul to the southward and pass outside of Ranger, Jackson, and Union Ledges. In thick weather, during the S.W. monsoon, it will be prudent, after making Landfall Island, and passing to the northward of it at a moderate distance, to steer East until out of soundings; or to keep in deep water on the outer verge of the bank, to round the ledges with safety, for Union Ledge is about 3 leagues from the shore, and not far within the edge of the bank of soundings.

Saddle Mountain.

About 3 leagues to the southward of Port Cornwallis is Saddle Mountain, the highest on these islands, and discernible at 20 leagues' distance; it appears in the form of a saddle when viewed either from the east or westward, and its north peak is in lat. 13° 10′ N.

Coast to the southward.

About 5 leagues to the southward of Saddle Mountain lies Sound Island, fronting the east entrance of Andaman Strait, called Stuart Sound, having 70 and 80 fathoms very near it, and no soundings about a league off shore; the whole of the east coast, from Saddle Mountain to lat. 12° 36′ N., is steep and mountainous.

West Coast of Great Andaman.

The west coast of the North Andaman has a bank, with various depths, stretching along it, and extending much farther out in some parts than the soundings on the eastern coast.

Bank off it.

Nearly west from Saddle Mountain, about 8 or 9 leagues from the west side of the island, there is an extensive part of the bank, which is very shoal, and *probably* dangerous; although its dimensions and true position are very imperfectly known. Captain William Richardson states, that his chief officer ran West on it 2 leagues in soundings from 6 to 4½ fathoms; he supposed that to be its breadth, and the length to extend North and South, parallel to the coast. A country ship from Musulipatam bound to Pegu, at day-light, September 20th, 1792, saw the Great Andaman bearing East, and observed at noon in lat. 13° 0′ N., then distant from the island 9 or 10 leagues. From hence she steered 3 or 4 miles to the eastward with a light breeze, and at 2 P.M. coral rocks were perceived under her, covered *apparently* with so little water that the rudder seemed nearly to touch them; hauled instantly to the westward and soon got into deep water. In May, 1795, the Company's ship Pitt, bound from Bengal to England, had the Saddle Mountain bearing East 9 or 10 leagues, and the extremes of Great Andaman from N. E. by E. to S. E. by S.; she then tacked in 14 fathoms, and had 8 fathoms coral rocks in stays. Standing to the northward with a light breeze, she had 11, 7½, 14, 16, 24, 18, 12, to 9 fathoms, in the first part of the night, then tacked and stood S.W. by S., deepening gradually till day-light. At sun-rise the mountain bore E. N. E., and the extremes of the land from N. E. by N., to S. E. by S., distant 9 or 10 leagues, then in 60 fathoms. Between the shoal bank and the coast the soundings vary from 40 to 20 fathoms, and 15 fathoms near the land.

THE MIDDLE ANDAMAN is only separated from the North Andaman by the narrow strait before mentioned, called Andaman Strait. The island is about 50 miles in length North and South, and 15 or 16 in general width. Off its N.W. point is an island called Interview Island, forming inside it Port Andaman; and off its S. E. part

there is a group of islands and rocks separated from it by Diligent Strait, hereafter to be described.

Port Andaman, about 14 leagues to the southward of West Island, is formed between the west entrance of Andaman Strait and a long island fronting it at a small distance, called Interview Island, that extends from lat. 12° 47′ N. to 13° 1′ N. About 5 miles off its north end there is a small island, with an extensive reef projecting from it towards the north point of the former, betwixt which and the reef there is a passage. A reef projects from the south end of Interview Island, with 14 fathoms close to, and also within it, in the entrance of the port; and to the northward betwixt that island and the coast lie several islets and rocks; other small islands are dispersed along the coast, from Interview Island to the N.W. end of the Andaman, with soundings near them, from 12 to 25 fathoms. Port Andaman. Interview Island.

From Port Andaman to the western entrance of Middle Strait, in lat. 12° 12′ N., some islets and reefs line the shore. About 5 leagues off, in lat. 12° 30′ N., opposite an island near the shore called Flat Island, there is a bank, with 12 fathoms on it, and 30 to 40 fathoms between it and the land. Coast from thence southward.

Diligent Strait is formed between the S. E. coast of the Middle Andaman and some contiguous islands, and a group or chain of larger islands about 3 to 5 leagues off it, extending from lat. 11° 48′ to 12° 20′ N. It is 2 and 3 leagues wide, except towards the middle, where it is only about 2 or 3 miles in breadth betwixt the nearest islands, and where the least water *found* was 8 fathoms; from 17 to 25 fathoms were found in the northern part of the strait, and in the southern part from 30 to 40 fathoms. The islands which form the east side of this strait are generally high, covered with wood and connected together by reefs; a bank of soundings extend a few miles around them, and along the coast of the Andaman opposite, but a few leagues to the southward this coast becomes very steep. At the north part of Diligent Strait there are several shoals, and reefs project from some of the islands; the anchorage in the middle of it is good, with shelter from all winds. Opposite these islands, in lat. 12° 2′ N., lies the eastern entrance of Middle Strait, which divides the Middle Andaman from the South Andaman. Diligent Strait. Adjacent Islands.

THE SOUTH ANDAMAN is about 43 miles in length North and South, and 15 in width; it is separated from the Middle Andaman by the narrow channel called Middle Strait, and has off its south end several islands, the principal of which is Rutland Island, hereafter described. The ports in the island are, Port Meadows and Port Chatham on its east side, and Port Campbell on its west side. South Andaman.

Port Meadows, in lat. 12° 0′ N., is a small harbour with an island at its entrance, inside of which there appears to be secure anchorage in from 7 to 10 fathoms. The passage north of the island should not be attempted, that to the southward of the island is the proper one, but is less than a quarter of a mile wide, and has two rocky patches in the fair way, with only 4 and 4½ fathoms on them. Port Meadows.

Port Chatham (the entrance), in lat. 11° 43′ N., and 4 leagues from the south end of the South Andaman, extends a considerable way inland; it has 13 fathoms in the entrance, near the islet fronting it, called Ross Island, and there are other islets and reefs inside. From this port to the southward, the coast is bold, with various depths on the bank of soundings lining the shore. Port Chatham.

Port Campbell, in lat. 11° 59′ N., is an inlet 6 or 7 miles in extent, with an islet on each side the entrance, off which and off the contiguous shores banks extend, narrowing the channel to less than half a mile; it widens inside, affording an anchorage in depths from 10 to 12 fathoms. Port Campbell.

Rutland Island; and the contiguous islands.

RUTLAND ISLAND, near 3 leagues in length, 2 in breadth, and of considerable height, is separated from the south end of Great Andaman by a narrow strait, called Macpherson's Strait, although formerly considered as part of that Island. This strait is scarcely one-fifth of a mile wide at the north point of Rutland Island, having 10 and 12 fathoms at the west entrance, and generally from 16 to 19 fathoms all the way through.

At a small distance from the west point of Rutland Island there are two small islands called The Twins, with a reef projecting from them a little way to the West and southward, near to which the depths vary from 12 to 22 fathoms; and off the S. E. point of the same island there is a group called the Five Islands, and in some charts, Angue Islands, which are moderately elevated. Between the point of Rutland Island and the nearest of these, distant from it about a mile, there is a safe passage with deep water in it, 45 to 60 fathoms. Along the south side of the island there are regular soundings of 13 to 18 fathoms about 2 or 3 miles off; but nearly 2 leagues to the westward of the south point, and the same distance S. Westward from the Twins, there is a bank of coral rocks, with 7 fathoms on it, and probably less water. The south end of Rutland Island is in about lat. 11° 22′ N. Variation 1° 10′ East, off it in 1791.

To the N. W. of Rutland Island, near the shore of the South Andaman and off the western entrance of Macpherson Strait, are several islands, which, together with their connecting reefs, are called the Labyrinth.

North Centinel.

THE NORTH CENTINEL, about 15 miles West of the Labyrinth, is a level island covered with trees, about 5 or 6 miles in extent North and South, and may be discerned about 6 leagues off. The shore is rocky, and two islets lie at the south end, and one at the N. W. end of the principal island. The centre of the North Centinel is in lat. 11° 34′ N., lon. 92° 24′ E., and 5° 56′ West of the south end of Junkseylon, by chronometers, measured by me in 1800. Captain Clarke, of the True Briton, made it in lon. 92° 24′ E. by chronometers, measured from Madras observatory in 1801; and Captain P. Heywood, in 1802, made it also in 92° 24′ East by chronometers and lunar observations. There is said to be fresh water upon this island. The bank of soundings extends from the west coast of the Andaman a little beyond the North Centinel, with various depths on it, from 20 or 30, to 50 fathoms, the bottom sand and coral towards the shore; but in 40 and 50 fathoms it is generally ooze.

South Centinel.

SOUTH, or LITTLE CENTINEL, in lat. 11° 0′ N., bearing from the former about South, distant 11 leagues, and 5 or 6 leagues distant from the N. W. part of Little Andaman, is a small woody island, about a mile in extent East and West, that may be seen about 6 leagues. Frm each end of it coral reefs project about two cables' lengths, on which the sea breaks high in the S. W. monsoon. Abreast of the east end of the island, about a quarter of a mile off, we had no ground 40 fathoms; but about half-way between it and the N. W. part of the Little Andaman, there is ground, 45 and 50 fathoms, decreasing to 13 and 10 fathoms within 1 or 2 miles of that shore.

Duncan Passages.

THE DUNCAN PASSAGES are formed by the islands which lie between Rutland Island and the Little Andaman; the larger of the two is very safe and commodious.

Northern or small passage.

The northern or small passage, through which Captain P. Duncan returned from Manilla, in January, 1760, is formed on the north side by the Five Islands, and on the

south side by Passage Island and the Sisters; 3 or 4 miles wide, with soundings from 25 to 14 fathoms.

The southern extremity of the Five Islands is in lat. 11° 17′ N., from which projects a reef to a small distance around these islands. Passage Island, of middling height, lies to the southward 4 or 5 miles from these, and the Sisters about 7 or 8 miles to the S. S. Eastward. The latter are two small islands near each other; the southernmost, in lat. 11° 10′ N., is sometimes, from its shape, called Round Island. In coming from the westward towards the Great Passage, the Sisters are on with each other until they bear N. 20° E., then they begin to open, and the North Brother is on the same transit line bearing from them S. 20° W., distant 11 miles, or in lat. 10° 59½′ N. The Brothers are two small islands on a transit line bearing S. 36° W., separated about 2 or 3 miles, and distant from the N. E. part of the Little Andaman from 4 or 5, to 8 miles: they are not so high as the other islands; the trees on the southernmost are ragged, but on the North Brother they are perfectly level, which on this account is sometimes called Flat Island. Five Islands. The Sisters. The Brothers.

The Great Passage, through which Captain Duncan went in his passage to Manilla, formed between the South or Round Sister and the North or Flat Brother, is about 10 or 11 miles wide, and very safe by day or night, if not too dark to see the land when near it, there being no danger, unless a reef projecting about half a mile from the north end of Flat Island be considered one, which by the water breaking on it is always visible. If it be too dark, a ship may anchor in 12 to 17 fathoms sandy bottom in the channel, for the depths are generally from 12 to 20 fathoms, sandy bottom, on the bank extending between Rutland Island and the north end of Little Andaman. This bank projects only a few miles to the eastward of the Brothers and Sisters, and 4 or 5 leagues to the westward of them, where it shelves suddenly to no ground, forming a deep concavity between the Centinels; for it takes a sharp bend from the north part of Little Andaman to the westward, and from Rutland Island it stretches out round the Great Centinel, joining the bank on the west side of the Great Andaman. Great passage.

As reefs project from each of the Brothers, the space between them probably affords no safe passage for a large ship; but between the South Brother and the N. E. end of the Little Andaman there is a passage, with 6, 8, and 10 fathoms in it, through which H. M. sloop Ariel went in 1790. It is about a mile in breadth, bounded by reefs projecting from the South Brother and Andaman, and being narrow, it should not be entered except from necessity:—the passage to the northward of the Brothers ought always to be chosen in preference.

In light breezes and fine weather, a kind of tide sets through the channels among these islands to the eastward and westward, but at times currents prevail, which are generally governed by the wind. In the N. E. monsoon, on both sides the islands, the current sets mostly to S. W. or southward; a ship running for Duncan's Passage should, therefore, endeavour to keep a little to the northward in this season, and to the southward in the opposite monsoon, according to the prevailing wind, that she may preserve a leading breeze to pass through the channel. Tides and currents.

THE LITTLE ANDAMAN extends from lat. 10° 53′ N. to lat. 10° 26′ N., being 9 leagues in length North and South, and about 5 leagues in breadth at the middle of the island; the S. E. point is 16 miles East from the North Centinel by chronometer. This island has an even appearance, a little convex, sloping from the centre toward the sea all round, and may be seen 6½ or 7 leagues from the deck of a large ship. Like all the other islands, it is well clothed with trees, and two small Little Andaman.

runs of water fall into the sea, one at the north end, the other in a small bay at the N. W. part.* The soundings along the east and west sides of the island are mostly from 10 to 18 fathoms about 1 or 2 miles off, deepening about 5 or 6 miles off to 50 or 55 fathoms, then no ground; the south side is more steep, there being no ground about 3 or 4 miles off shore, and 38 or 40 fathoms within 1 or 2 miles of it, a little to the eastward of the S. W. point of the island. From this point W. by S., 5 or 6 miles distant, there is a bank of coral rocks with 7 or 8 fathoms on it, or *probably* less water; which may be avoided by keeping farther out, or between it and the S. W. point of the island, in a good channel, having 13 and 14 fathoms near the sandy point, and deepening to 20 or 25 fathoms towards the coral bank.

Invisible Bank. INVISIBLE BANK, so named by Captain Blair, as the water did not seem discoloured upon it, lies East from Duncan Passage, distant from the Sisters 14 or 15 leagues, extending North and South about 10 leagues, or from lat. 10° 56′ to 11° 27′ N., and is nearly from 2 to 3 leagues in breadth. The soundings on this bank vary from 17 or 18, to 40 or 50 fathoms near its outer edges, where in deep water the ground is sometimes ooze or sand, but well in upon the bank, frequently foul and rocky, particularly near the dangerous rock now to be described.

Flat Rock. Flat Rock, in lat. 11° 8′ N., about lon. 93° 36′ E.,† bearing nearly East from the Sisters in Duncan Passage, distant 14 leagues, is very dangerous, being only 8 or 10 feet above water, of circular form, about 30 yards in diameter, with rocky foul ground stretching out from it about twice its length, on which the sea breaks in bad weather. This dangerous rock being situated upon the Invisible Bank, a little to the southward of its centre, the lead, if kept going, will denote the near approach to it, for soundings extend from it all round to a small distance, but farthest to the North and southward. At a small distance from the rock, the depths are from 13 to 20 fathoms, coral and sand, increasing in standing from it all round to 30 or 40 fathoms towards the edge of the bank; but as the soundings are not always regular, it would be dangerous to approach the rock in the night or in thick weather; for at such times, when a ship is in the vicinity of the bank, the lead should be kept briskly going, and if soundings are obtained, she ought to tack or haul out immediately into deep water. Flat Rock, being directly opposite to Duncan Passage, is much in the way of ships from Mergui proceeding by that passage in the N. E. monsoon; but with common attention it may always be avoided.

Barren Island. BARREN ISLAND (the centre), in lat. 12° 16′ N., lon. 4° 24′ West from the south end of Junkseylon by chronometers, measured by me in 1803, and in 93° 54′ East, by Captain Hall's chronometers, in the Worcester, in 1795, is a volcano, but of an even appearance when viewed at a considerable distance, and may be seen from 12 to 13 leagues from the deck. It is of small extent, covered with trees, except near

* Like the Great Andaman, it is thinly inhabited, the natives depending chiefly on what fish they can procure for subsistence. The inhabitants of these islands were long considered cannibals, but it is now known, that if ever they deserved such appellation, it arose probably from excessive hunger, and not from choice. It is however prudent for boats landing at these islands to be on their guard, for, a few years back, the boat of an American ship, in landing on the Great Andaman, was assailed by a shower of darts from the natives in ambush behind the bushes, who rushed out and endeavoured to hold fast the boat. After firing some musket shots at them, they fled, but several of the sailors were wounded by the darts, one gentleman, who went in the boat for amusement, very severely between the ribs.

† Captain W. Owen, in H. M. sloop Seaflower, made the breakers on the Flat Rock in lat. 11° 17′ N., lon. 93° 29′ E., and some other navigators place it nearly in this longitude.

the crater.* Captain Almes, who landed on it in 1801, found no soundings within 10 yards of the shore; firewood could be got with difficulty, but he saw no runs of water.

With Barren Island bearing N. N. W. 5 or 6 leagues, there is said to be a bank, where Captain Sharrington, in the Bahar, saw the rocks alongside, and had 4 fathoms water. This account is rendered doubtful, for no signs of a shoal-bank in the situation described have been discovered for many years.

Narcondam.

NARCONDAM, in lat. 13° 24′ N., lon. 94° 12′ E.,† bears about N. by East from Barren Island, distant 70 miles, by observations taken when passing between them; Captain Hall made it in lon. 94° 11′ E. by chronometers, and it is about 21 leagues distant from the nearest part of the North Andaman. When in 21 fathoms close to Jackson Ledge, off Landfall Island, Narcondam was in sight from our mizen shrouds; and on the same day, when the observed latitude at noon was 12° 55′ N., the Andamans, seen from the deck, bore from W. by S. ½ S. to W. N.W., Gap of Saddle Mountain W. by N. ½ N., Narcondam N. E. ¼ N., and Barren Island not much elevated above the horizon S. by E. ½ E. Narcondam may be seen about 14 or 15 leagues from the deck, being higher than Barren Island, and appears in the form of a cone or pyramid with its summit broken off. Close to it on the east side there is an islet or rock, and another at the south point; but it is bold and safe to approach all round, and, like Barren Island, of small extent.

NICOBAR ISLANDS.

Nicobar Islands.

THE NICOBAR ISLANDS, called by the Malays the Sambilangs, or Nine Islands, extend N. N. W. and S. S. E., about 53 leagues, having several safe channels among them: eight or nine of them are of considerable size; the others, nine or ten in number, generally small. The islands are rendered unhealthy by the noxious vapours which arise from the thick vegetation of the forests, and the fever which prevails, called the Nicobar fever, or jungle fever of the Continent, frequently proves fatal to Europeans who remain at these islands.

Car-Nicobar Island.

CAR-NICOBAR, the northernmost of these islands, bears from the S. E. point of

* It was not generally known that Barren Island was in an active state until 1791, when we passed close to it in the King George, and perceived the crater of the volcano, with a quantity of very white smoke close to it. Since that time it has continued active, subject to violent eruptions in the S.W. monsoon, or rainy season. In November, 1803, the volcano was observed to explode regularly every 10 minutes, projecting each time a column of black smoke perpendicularly to a great height; and in the night a fire of considerable size continued to burn on the east side of the crater, which was then exposed to our view. The crater is large, nearly in the middle, or rather toward the north side of the island, and only seen from that side; close to it on the west side there is a small hill; but the contour of the island seems not to have altered in 25 years, although the volcano has been subject to great explosions, and the crater is of great dimensions when compared with the extent of the island. The Thetis made Barren Island in lon. 93° 53′ E., and the Mornington made it in 93° 54′ E. by chronometer from Prince of Wales Island.

† Captain Corry, of the Royal Navy, made it in lon. 94° 20½′ E., or 6° 1½′ West of the Fort of Prince of Wales Island.

the Little Andaman about S. by E., distant 80 miles, its centre being in lat. 9° 10′ N., lon. 92° 54′ E., or 12° 32′ E. by chronometers from Madras. It is about 6 miles in length North and South, and 5 in breadth, very little elevated above the sea, except at the west side, and near the S. E. point there are small risings. The middle of the island is covered with long rich grass, where multitudes of hogs are bred; near the coast there are fruit trees of various kinds, particularly orange, citron, lemon, and lime trees; plantains, yams, and sweet potatoes, may be also procured, but coco-nuts are in the greatest abundance, and on these all the animals are fed, there being no sort of grain. Ships from the Coromandel coast stop here at times to load with coco-nuts, which they receive in barter for coarse blue cloth or other piece goods; and with the cargo procured here they proceed to Rangoon, where they receive for it in exchange a cargo of plank for ship building.

Supplies.

Inhabitants.

The inhabitants of this island are usually hospitable to strangers, and inoffensive to each other; they live in small villages near the sea on different sides of the island, for the conveniency of carrying their coco-nuts to ships. A ship having a scorbutic crew may touch here for a supply of hogs, or other necessary refreshments, and she may anchor on either side the island in from 12 to 30 fathoms, near some of the villages; but soundings do not extend far out: the bank being steep, and the bottom mostly sand, or sand and coral, makes the anchorage indifferent. The most eligible place to anchor at is in a bay at the N.W. end of the island in 10 or 12 fathoms, abreast the watering place and village. The Minerva, in January, 1803, anchored in 8 fathoms, about ½ a mile off shore, with the village on the west side of the island bearing East, and procured a few hogs. The same ship, returning from Bengal, anchored April 13th, 1803, in 11 fathoms, with the extremes of the island from N. E. by N. to S.W., and a village S. by E. 1 mile, where she remained three days during calms and light airs filling up her water.*

Anchorage.

The City of London, November 15th, 1800, anchored at 10 P.M. in 15 fathoms, and at day-light the extremes of the island bore from E. ½ N. to S.W. ½ S., the hill South, off shore about 2 miles. She filled up with good water, procured some fresh provisions, coco-nuts, limes, &c., for her scorbutic and sick people, and sailed on the 18th.

The Ganges anchored, November 9th, 1805, in 15 fathoms, at the N. E. part of the island, bearing from West to S. by E. ½ E., and a village S.W. ½ S., off shore 1½ miles; here she remained two days procuring about 15 butts of water, the wells being nearly dry, and the surf rendering it difficult to get the casks from the shore; so the other side of the island seems preferable, when the season will permit a ship to anchor there.

Ten Degrees Channel.

The channel betwixt this island and the Little Andaman, generally called the Ten Degrees Channel, is spacious and clear from danger.

Batty Malve Island.

BATTY MALVE, in lat. 8° 46½′ N., bearing from the south end of Car-Nicobar about S. by E. ½ E., distant 7 leagues, is about 1½ miles in length East and West, and

* Captain Hay, of the Inglis, who touched here for refreshments, January 28th, 1813, advises not to round the N.W. point of the island too close, as he got into broken water, at 1½ miles distant from it; and states that a large ship ought not to come under 12 or 14 fathoms, as he did for the convenience of getting refreshments quickly on board, having anchored abreast the village in 9½ fathoms 1 mile distant, the north point N. E ½ N., south point W. by S.; with 30 fathoms of cable out, a rock was seen under the ship, having only 7½ fathoms water on it. A ship ought to anchor about half-way between the N. W. point and the village, in 12 or 14 fathoms sand, but never so near the village as did the Inglis.

half that breadth. It is destitute of water or inhabitants, being composed of an entire rock, covered with a thin stratum of soil, which only gives root to some shrubs and scraggy trees. At the west end it is of moderate height, sloping in the form of a wedge to the eastward, and has, therefore, been sometimes called the Quoin. At the S.W. end, about a mile distant, there are soundings from 25 to 35 fathoms, and 40 fathoms about half a mile off the west end of the island.

CHOWRY, in lat. 8° 28½′ N., bearing S. E. by S. from Batty Malve, distant about 7 leagues, is of square form, and scarcely 1½ miles in extent. The S.E. angle consists of a large rock rising perpendicularly from the sea to a considerable height above the tops of the trees that grow on the island, which, excepting this rock, is low and level, and not elevated more than 6 or 8 feet above the surface of the sea. Chowry Island.

Contiguous to the shore coco-nut trees abound, and the whole of the level part of the island is a continued orchard of tropical fruit-trees, oranges, citron, limes, &c. The natives rear also hogs and poultry, and, like those on Car-Nicobar, are generally friendly to such ships as stop at the island:—coco-nuts may also be procured here for the Pegu market. Soundings project 1 or 2 miles from the shore, particularly off the S.W. end of the island, where a ship may anchor in 15 to 25 fathoms. On the N. E. side there is a village, with anchorage abreast, in 20 or 30 fathoms, sandy bottom.

TERRESSA, extending N. W. and S. E., between lat. 8° 12′ and 8° 22′ N., is about 4 leagues in length, and 5 miles broad at the N. W. end, but scarcely half so much at the S. E. end; the north end bears from the nearest part of Chowry S. S. E. ¾ E., distant 6 miles. Terressa, when viewed at a considerable distance, appears like two islands, the land towards each end, particularly the north part, being much higher than in the middle. Its animal and vegetable productions are the same as on Car-Nicobar, but it is less populous. There is anchorage both on the east and west sides of the island; on the west side, the depths are from 30 to 40 fathoms within a quarter or half a mile of the shore; at the south point, where a reef projects into the sea, it is not so steep, for a ship may anchor in 30 fathoms coarse sand, near the S. E. point of the island. This point I made in lon. 93° 18′ East, or 12° 58′ East from Madras, by chronometers. Terressa. Position.

BOMPOKA, separated from the S. E. end of Terressa by a channel about 2 miles wide, is a small island, formed of a mountain partly covered with wood. Its summit is a sharp ridge, extending North and South about half the length of the island, from which the declivity on all sides is regular to the water's edge. This island is noted on account of its women being more fair and more handsome than any of the Nicobarians. In the channel betwixt it and Terressa there is said to be safe anchorage, particularly inside, in 15 or 20 fathoms under Bompoka. Bompoka.

KATCHALL, or Tillongchool, situated to the S. Eastward of the south end of Terressa and Bompoka, and separated from them by a fine safe channel, about 5½ leagues wide, is of triangular form, each side being about 3 leagues in extent. The north and west sides are moderately elevated, of level appearance, but towards the middle and S. E. part of the island the land is higher, and may be discerned about 8 leagues. It is covered with wood, and along the N. W. side there is anchorage in 15 to 25 fathoms coarse sand, from 1 to 2 miles off shore; but the N. E. side is steep, having no ground at 100 fathoms about half a mile from it. The west end of Katchall Katchall.

Position. is in about lat. 7° 54′ N., lon. 93° 27′ East, or 13° 7′ East from Madras by chronometers, measured by me in 1798; and Captain C. C. M'Intosh made it 13° 6′ East from Madras by chronometers, in 1797.

Ships may pass at discretion through any of the channels between Car-Nicobar and Katchall, all being safe. Steering, in the Anna, for the Sombreiro Channel in August, we were horsed to the northward by a current, and saw Katchall bearing E. S. E.; then bore away to the northward of it and Camorta, and passed between the latter and Tillangchong, through an excellent channel.

Noncowry Island. NONCOWRY ISLAND, which gives name to the harbour, hereafter described, and bounds it on the south side, is about 4 miles in extent, of triangular form, rugged and uneven, almost covered with wood. It abounds with lime-stone, is thinly inhabited, and little can be procured from it excepting timber and some hogs.

Noncowry Harbour. NONCOWRY HARBOUR, in lat. 8° 0′ N., lon. 93° 41′ E., distant from the east side of Katchall 4 or 5 miles, formed by a narrow channel that separates Noncowry Island from the south part of the island Camorta, is very capacious and will shelter a large fleet of ships from all winds. Having an entrance at each end, one to the eastward, another to the westward, with soundings, where ships may anchor occasionally, makes it very convenient; and they may enter or depart from it in every month of the year. The western entrance, about an eighth of a mile, or 100 fathoms wide, is formed between two steep points of high land, and the depths in it are generally from 27 to 35 fathoms: outside of it, a sand-bank with irregular soundings from 6 to 12 fathoms, and patches of rocky bottom, project a little way from the S. W. point of Camorta. The eastern entrance is very little wider than the western, being contracted by rocky banks which line the shore on each side, having 12 and 14 fathoms close to them, and from 18 to 20 fathoms in mid-channel. Outside this narrow part of the entrance there is less water betwixt the south end of the island Trincutte and the N. E. end of Noncowry; but in mid-channel, never less than 6 fathoms, and generally 5 or 6 fathoms, close to the rocky banks that bound it on each side.

The eastern entrance is preferable for going in, being rather wider, with less water; and there is safe anchorage outside the narrow part, in the space betwixt Trincutte and the east side of Camorta, which is called *False Harbour*, having various depths, from 6 to 10 fathoms, but it becomes very shoal to the northward.

The harbour is separated into two parts by two points of land facing each other: the easternmost, called Cross Harbour, from its form, is the smaller, and contains several shelves of rock in the southern arm of it, with 5 or 6 fathoms close to them; here ships might be hove down to their own guns, the water being perfectly smooth in all kinds of weather. The western or larger part of the harbour is a great basin, of an oblong square form, about 2 miles long and 1 broad, with a cove on the west side, and another at the south end. In the N. W. part there is a rocky bank, with 5 and 6 fathoms water on it; but the depths throughout the harbour are generally 10 or 12 fathoms near the shore, and 18 or 20 fathoms in the middle, except near the western entrance, where there are from 27 to 34 fathoms. The bottom is all soft, good holding ground.

Tides. The tide runs strong with eddies through the western entrance in the springs, but it is safe with a steady fair wind, particularly when departing from the harbour. The flood sets through the harbour to the eastward, but with very little velocity inside; high water at $9\frac{1}{4}$ hours, on full and change of moon, and the tide rises 8 or 9 feet. Var. 1° 30′ East, in 1791.

Directions. Ships going in or out by either entrance should endeavour to keep in mid-channel

between the points, with people on the fore, or fore-top-sail yard, to look out for the edges of the rocky banks that line the shores.

A few Danish or Moravian missionaries were settled here many years, for the purpose of converting the natives to Christianity; the village at Cross Harbour, where they resided, was called by them Herman. Few refreshments are got here, the land being hilly and not cultivated, although on the north side of the harbour the soil is good, and will admit of cultivation. Water is got in wells, although it is rather scarce in the dry season. The Bellona and Isabella went into the harbour, in November, 1795, and could only procure a small supply of water, a few hogs, and one or two bullocks; although the Danish chief gave them his assistance. The natives will barter what refreshments they have for tobacco, in preference to cash, and shag from Java they are very fond of. The harbour, like the islands generally, is considered unhealthy, and the fever that prevails, called the Nicobar fever, or jungle fever of the continent, frequently proves fatal to Europeans who remain at these islands.

CAMORTA, or CAR-MORTA, which forms the north side of Noncowry Harbour, is about 16 miles in length North and South, extending from lat. 8° 0′ to lat. 8° 15′ N., and is from 2 to 5 miles broad. The north end and middle of this island are flat, and not much elevated, but about the harbour it is high, particularly on the west side, where stands the principal village at the foot of a perpendicular ridge. There is said to be several sorts of poon trees, fit for masts, which grow on the island; and there are several places of pasturage, with a rich soil, producing yams, pine apples, plantains, guavas, and sugar-canes are said to grow without cultivation; notwithstanding, it is thinly inhabited. About 3 miles from the S.W. point lies the mouth of a lagoon, which extends into the island a great way. Along the west side there are soundings near the shore, and from the N.W. point projects a reef of rocks, with shoal water about 3 miles off. Camorta.

TRINCUTTE, a low, level island, covered with beetle-nut and coco-nut trees, about 2 leagues in length, near to, and fronting the east side of Camorta, is separated from it by a narrow channel, which, excepting the southern part, is shoal, and forms the first large opening in entering Noncowry Harbour from the eastward. There are soundings of 15 to 20 fathoms along the east side of Trincutte at a small distance, and good anchorage in 8 or 9 fathoms at the north end, between it and the N. E. part of Camorta. Trincutte.

TILLANGCHONG, including the small islands adjoining its south end, extends from lat. 8° 22′ to 8° 33′ N., being 2 or 3 miles in breadth, and lies N. by E. of Camorta, 3 or 4 leagues distant. It is a high, oblong, rugged mountain, that may be seen 12 leagues off, in many parts covered with trees, and inhabited only by such persons as have been banished from the other islands. The east side of the island is steep, but close to the islets and rocks that line its western shore, and near those chained to its south end, the depths are from 36 to 42 fathoms. Betwixt the latter and the north end of Camorta, the channel is 3 leagues wide and very safe, with a bank of soundings stretching from the islets off Tillangchong to the Islands Camorta and Trincutte, on which there are 42 and 45 fathoms near the former, from 40 to 65 fathoms in mid-channel, and 18 or 20 fathoms near to Camorta. Tillangchong.

SOMBREIRO CHANNEL, bounded on the north side by the islands of Katchall Sombreiro Channel.

and Noncowry, and by Meroe or Passage Island on the south side, is very safe, and about 7 leagues wide.

About 3 leagues South from the S. E. end of Katchall there is a coral bank, with various depths; the least water found on it has been 9 and 10 fathoms, but both to the northward and southward of it there is no ground in the channel. H. M. S. Trident, February 2nd, 1805, got one cast of soundings about 15 fathoms, coral and sand, in lat. 7° 42½′ N., lon. 93° 33′ E., by chronometer, but the weather was too hazy to obtain bearings of the land. Ships steering for the channel, if not certain of their latitude, should endeavour to fall in with the land on the windward side, according to the prevailing monsoon; and they may pass through without hesitation, by night as well as by day, if the weather is not too dark at the time.

Meroe.

MEROE is a low small island, about 3 leagues to the N.W. of the Little Nicobar, and bears from the S. E. point of Katchall S. by E. ¼ E., distant 7½ leagues, being situated in lat. 7° 29′ N., lon. 93° 46′ E., or 13° 24′ East from Madras by chronometers.

Track and Trice Islands.

About 4 miles E. by S. from Meroe, and nearly the same distance from the north end of the Little Nicobar, there is a small island, called Track, and another close to it on the east side, called Trice, which are surrounded by rocks. Betwixt them and Meroe the passage is safe, said to have soundings from 12 to 20 fathoms; but the Prince Regent sailed through this passage August 8th, 1820, at half-past 5 A.M., and had no soundings with 30 fathoms line. Betwixt these small islands and the Nicobar, there is said to be a narrow and critical passage, with soundings from 7 to 12 fathoms, which should never be attempted.

The two large islands to the southward of the Sombreiro Channel are sometimes called the Great and Little Sambilangs, but generally, Great and Little Nicobars; the former being the largest and southernmost of all the islands which form this chain.

Little Nicobar.

LITTLE NICOBAR ISLAND extends nearly N. E. and S. W. from lat. 7° 13′ to 7° 26′ N., being about 4 leagues in length and 2 in breadth; it is moderately elevated and hilly, covered with wood, and steep to seaward; but there are soundings all round near the shore. On the N.W. side, a little to the westward of an island adjoining the shore, there is said to be anchorage off a small bay, where there is a run of water; but although this island and the Great Nicobar are said to have many inhabitants, they are less known than those of the other islands; the natives, being shy of strangers, seldom or never venture on board of passing ships. They are, however, thought to be inoffensive, and have sometimes treated with lenity the people belonging to vessels that had the misfortune to be shipwrecked among them.

St. George Channel.

ST. GEORGE CHANNEL, formed between the Great and Little Nicobar, is from 3 to 6 miles wide, and extending E. N. E. and W. S. W., about 5 or 6 leagues in length, with deep water in it, except near the western entrance. The bottom in general is foul, with strong tides or currents running in eddies through the channel; therefore, of late years, few ships have passed through it, unless accidentally carried into it by an unexpected current. A little inside the western entrance is the Island of Condul, nearest to the southern shore, and between them there is no safe passage. From the north end of the same island a reef projects considerably, betwixt which and the northern shore is the proper channel, and ships that intend to proceed

through should keep nearest to the north side, or Little Nicobar shore, where there is said to be soundings, but none in mid-channel. The rocky bottom, deep water and strong eddies, will, however, always make it imprudent to anchor, except to the westward of Condul Island, where the depths are moderate. On the south side the eastern entrance, off the N. E. end of Great Nicobar, is the small Island of Cabra, of middling height; and on the north side, the Island of Monthoule, near the east end of Little Nicobar. The entrance into the channel is between these two small islands.

GREAT NICOBAR ISLAND extends N. by W. and S. by E., about 10 leagues in length, and is 4 or 5 leagues broad at the north part and middle of the island, where the land is high, and may be discerned 11 or 12 leagues off. The south part becomes narrow, projecting in a low level point, which is about $1\frac{1}{2}$ or 2 miles broad, covered with trees, and having a sandy beach facing the sea. This point is in lat. 6° 45′ N., lon. 94° 0′ E., or 10° $34\frac{1}{2}$′ W. from Pulo Aor, by two chronometers exactly agreeing. By three chronometers agreeing to half a mile, I made it 21° 1′ E. from Bombay Castle, and Captain M'Intosh made it 21° 4′ East from the same, by good chronometers; the mean, 21° $2\frac{1}{2}$′ East, will place it in lon. 93° 58′ E., allowing Bombay Castle in 72° $55\frac{1}{2}$′ E. Captain P. Heywood, in 1804, made the south point of the Great Nicobar in lon. 93° 59′ E., by chronometers from Madras, allowing the latter to be in lon. 80° 20′ E., and he made it in 94° 2′ E. by lunar observations.

Great Nicobar.

Position.

The highest part of this island is in lat. 7° 8′ N., and mostly the whole of it is covered with trees. Soundings from 17 to 24 fathoms extend along the west coast about 2 or 3 miles off shore; from the S.W. side the bank projects about 2 leagues or more, the depths on it being from 25 to 30 fathoms about 5 or 6 miles from the shore. From the south point a reef projects a considerable way into the sea, and lines the shore on the west side, with soundings near it of moderate depths, over a bottom of coarse sand and shells; the S. E. side of the point is thought to be more steep, although it seems probable that soundings extend along the east side of the island near the shore, which part is generally avoided by ships.

THE CURRENT sometimes sets strong to leeward for several days together, through the various channels between the south end of the Little Andaman and the southernmost Nicobars, according to the strength of the prevailing monsoon; but at times it slacks, or sets to windward, particularly when the winds are light and variable. Under lee of the different islands there is frequently a kind of tide prevailing, when the current is setting strong to leeward through the channels between them.

Current.

WEST COAST OF SUMATRA.

ACHEN AND THE ADJACENT ISLANDS.

AS the GREAT ENTRANCE leading to MALACCA STRAIT from the westward is formed between the south end of Great Nicobar and Pulo Rondo, the latter

being the northernmost of the islands off Achen, it is expedient to approximate their true situations; for they are often seen by ships approaching the strait, or used as stations of departure in sailing from it, when bound to the westward.

Pulo Rondo.

PULO* RONDO is in lat. 6° 4½′ N., lon. 95° 12′ E., or 3° 47′ W. from Pulo Pera, measured twice, by good chronometers. Captain P. Heywood made it 14° 52′ East of Madras by chronometers,† which places it in lon. 95° 12′ E., and he made it 5° 9′ West from the fort of Prince of Wales Island, which would place it in lon. 95° 12′ East.

From the south end of great Nicobar it bears S. 61° E. (*true*), distant 84 miles, and being a high perpendicular rock of round form, may be seen 8 leagues from the deck of a large ship. On the north side it is steep without soundings, which is the case all round; but to the southward, distant from it about 2 miles or more, there is a ledge of rocks above water, betwixt which and the north-west end of Pulo Way there is a safe channel, about 3 or 3½ leagues wide.

Pulo Way.

PULO WAY, the largest of the Achen Islands, distant about 4 leagues to the south-eastward of Pulo Rondo, extends in the same direction about 3 leagues in length. Being high and uneven, it may be seen 12 leagues; and along the south side of it, in some parts, there are soundings near the shore. Captain Miller, of the ship William Wilson, describes Pulo Way as " steep to on its south side in most places," and adds, ' I have stood within two cables' lengths, and perceived no change in the water from the deep clear ocean blue, nor could soundings be obtained in stays; there is a bay of considerable magnitude just to the westward of the S.W. point, which may afford anchorage. There is a rock above water off the S. W. point about the size of a boat: it lies above half a mile off shore. It nearly proved fatal to the William Wilson, under my command, while beating through that channel in a moonlight night, but may be avoided when aware of its existence."‡

Malacca Passage.

MALACCA PASSAGE, formed between Pulo Way and the Sumatra coast, is about 3 leagues broad, having in it the small Island of Malora, or Pulo Buroo, nearly a third channel over from the Sumatra shore. The passage on either side this island is safe, but between it and Pulo Way the water is deep; whereas, that inside has moderate depths for anchoring occasionally, 14 to 16 fathoms near Pulo Malora, and 9 or 10 fathoms near the Sumatra shore, which in passing Point Pedro must not be approached under 10 fathoms. Captain Bradshaw says, that the passage between Pulo Malora and the main is only about 1½ miles wide, and he recommends, in working through in the night, to keep the lead going quickly, standing to 10 fathoms, and not under this depth, towards Point Pedro: the water deepens very quickly from 12 to 17 fathoms in standing towards Malora, then from 12 to 8 fathoms within half a mile of it, which ought not to be approached nearer, as a reef projects from the east side of it a little more than a quarter of a mile. This is the best passage to approach Achen in coming from the north-eastward or eastward.

Pulo Brase.

PULO BRASSE is high and even; it fronts the sea to the N.W., and the north end is in lat. 5° 46′ N., lon. 95° 5′ E., bearing from Pulo Rondo about S. S. W., distant

* Pulo signifies an island in the Malay language.

† The Princess Amelia, in 1811, made it 14° 51′ East of Madras by chronometers.

‡ *Nautical Magazine for* 1839, p. 84.

nearly 7 leagues. Off the north end of it there are four rocky islets, the northernmost of which is about 3 or 3½ miles distant, and is about 25 feet above water, with regular soundings near it, 25 to 28 fathoms mud, from 1 to 2 miles to the eastward and northward, but a reef projects from the north end of Pulo Brasse towards the other islets. The outer islet is bold to approach on the east, north, and west sides, and there is a safe passage between it and the next islet; but a reef surrounds the latter to the distance of a cable's length, upon which the sea breaks high in moderate breezes. Captain Miller remarks, that the two detached rocks off the north point of Pulo Brasse may by a stranger be mistaken in the night for the two rocky islets lying about 2 miles off the same point, round which it is necessary to pass as close as possible; caution is therefore necessary. The current, too, he observes, frequently sets very strong round these islands to the westward.*

Along the east side of Pulo Brasse there are 20 to 25 fathoms, sandy bottom, at a moderate distance from the shore, where ships may occasionally anchor; and with the outer islet bearing S. ¾ W., distant 2 miles, there are 23 fathoms.

BENGAL PASSAGE, formed between Pulo Brasse and Pulo Way, is about 4 leagues wide, and very convenient for ships sailing from Achen to the northward, as the current generally sets out in that direction; but those bound into the road seldom proceed through this passage, unless with a steady commanding breeze, there being no anchorage in it except near Pulo Brasse; the Malacca Passage is thought preferable. Ships coming from the S. Westward sometimes use the Surat Passage, but the Bengal Passage is favourable for ships bound out from Achen Road to the westward, as the current in the S. W. monsoon sets round Pulo Brasse to the westward, frequently from 25 to 40 miles in 24 hours. Bengal Passage.

PULO NANCY nearly joins to the S. E. point of Pulo Brasse; but between them, on the west side, lies Middle Island, of considerable size, with some islets or rocks near it on the south side. Contiguous to the west point of Pulo Nancy there is a reef of rocks, which bounds the west end of Cedar Passage on the north side, having 10 and 12 fathoms close to it outside, and 14 fathoms betwixt it and the point of Pulo Nancy, although it lies near that point. Pulo Nancy.

CEDAR, or SEDRE PASSAGE, formed between Pulo Nancy to the northward, and Stony Island and Pulo Gomez to the southward, is little frequented, although wider than the Surat Passage and safer than generally supposed, there being soundings in it from 17 to 20 fathoms in mid-channel. The only dangers are at the west entrance, rocks projecting from Pulo Gomez to the westward, on which the sea breaks high in bad weather, and the rocks on the north side close to the west point of Pulo Nancy already mentioned; there is also a reef that projects from the west end of Stony Island to the N. Westward a considerable way into the channel. If a ship proceed through this passage, it will be prudent to keep a boat a-head, sounding occasionally. Cedar Passage.

On the south side of Pulo Nancy, a little more than a mile inside the west point, there is good anchorage in 6 or 7 to 10 fathoms in a small bay, on the west side of which, fresh water may be procured and plenty of firewood. The narrowest part of the passage is betwixt the reef projecting from the west end of Stony Island and the shore of Pulo Nancy, and there it is about a mile broad. Between that reef and the

* *Nautical Magazine for* 1839, p. 84.

N. E. end of Pulo Gomez there are 14 and 16 fathoms in a channel of communication from Cedar Passage into the Surat Passage. Stony Island and Pulo Chinchin are steep on the north sides, having from 11 to 14 fathoms close to them: from the east point of Pulo Nancy rocks project a little way, and close to them there are 15 fathoms water.

Surat Passage and contiguous land.

SURAT PASSAGE is separated on the north side from Cedar Passage, by Pulo Gomez, Stony Island, and Pulo Chinchin, which extend in the line of the passages, and the two latter are chained together by rocks. On the south side it is bounded by

Achen Head.

the western extremity of the land called ACHEN HEAD, or KING POINT, in lat. 5° 36′ N., and very little to the eastward of Pulo Rondo; it is a high bluff headland, and forms the N. Western extremity of Sumatra. In approaching it from the S.W. no opening is perceived, the contiguous islands, Gomez, Nancy, and Brasse, appearing to join the mainland when seen from that direction. To the southward of King Point at 5 miles' distance, on the south side of a low green point, there is asandy bay, which at a considerable distance may be mistaken for the Surat Passage or a strait, the land there being low near the sea, and covered with trees. In this bay there is a rocky islet, and at its south point two rocks above water on which the sea breaks, with 12 and 14 fathoms near them, and the bay is lined by a reef fronting the sea. From hence Achen Head appears like a steep hill; Pulo Gomez then resembles two paps, its western point being very low, with an islet adjoining, and breakers projecting a considerable way to the westward. To avoid these, ships steering for the Surat Passage should keep nearest to Achen Head, which is bold, with regular soundings 12 and 14 fathoms sandy bottom at a moderate distance from it; and they may anchor occasionally, to stop tide, near that shore in 7 or 8, to 10 fathoms water. The south side of Pulo Gomez is also safe to approach; the depths are 24 to 15 fathoms when its south point bears East from a mile to half a mile, 18 fathoms with it E. by N. 2 miles, 14 fathoms when E. by N. three-quarters of a mile, 13 fathoms when it bears E. N. E. about 1 mile; and regular soundings, from 20 to 35 fathoms, extend about 2 leagues to the westward of it and Achen Head.

Directions.

If a ship about to enter the Surat Passage find the tide unfavourable, she ought to anchor under Achen Head until the flood is made, which sets directly through the passage to the N. Eastward, and the ebb in the opposite direction; after weighing with the flood she ought to keep nearest to Achen Head, in passing between it and Pulo Gomez, where there are regular soundings and good anchoring ground from 10 to 17 fathoms. The narrow gut or gatway, at the east end of the passage formed between the eastern extremity of Achen Head and the opposite island, is only about 80 or 90 fathoms wide, with 30 and 35 fathoms rocky bottom, and the tide sets through it with great rapidity 5 and 6 miles an hour on the springs. If the wind be contrary, a ship may *back and fill* through this narrow part, with her head towards the windward shore, keeping rather nearest to Achen Head, which is perpendicular and steep to; whereas, the shore of the opposite island is not so bold. Proceeding to sea in the S.W. monsoon, she may enter it with the first of the ebb, with the main-topsail aback and her head towards the Sumatra shore if the wind is at S.W.; but the eddies occasioned by the rapid tides sometimes carry a ship's head round in every direction, when driving through this narrow pass, particularly in light winds. Being formed between two points, and of little extent, a ship is soon drifted through; and as there is anchorage on each side of the entrance at a small distance, this passage has been sometimes used by

large ships,* but it must always be attended with some risk. Although ships have been recommended to back and fill through the Surat Passage when the wind is contrary, yet the Harriet, Captain Bean, in doing so was carried by the eddies on the rocks and wrecked. Captain Bradshaw is of opinion that the safest way to proceed through this passage to the southward with a contrary wind, is to reduce sail to three topsails when the northern entrance is approached, then keep the ship before the wind, letting her drift through; by this means she will be under the influence of the helm: whereas in backing and filling, should an eddy strike the ship on either bow, she might be on the rocks before she could be checked by the head yards.

The Castle Eden, bound to Bengal in a fleet, anchored, November 3rd, 1800, at 8 P.M., in 13 fathoms, at the west entrance of the Surat Passage. At day-light she weighed and stood for it with the wind at S. E., shoaling gradually to 7 fathoms, and deepening afterwards to 25 fathoms no ground. She was in the narrowest part of the passage at this time, when the tide turned to the S.W., and set her fast astern; she was permitted to drop into 8 fathoms fine sand, then anchored with Pulo Gomez S. 65° W., King's Point from S. 16° W. to the easternmost extreme of the passage N. 75° East. At 4 P.M. November 4th, she weighed with the flood, and went through the passage, then steered about E. N. E. to the anchorage at Achen, shoaling from 20 to 10 fathoms at 6. P.M., when she anchored with the river's mouth bearing S. E. ½ E., distant about 1½ miles. In the Surat Passage, it is high water about 8 hours, on full and change of moon. *Proceedings of the Castle Eden.*

ACHEN, in lat. 5° 35′ N., lon. 95° 26′ E.,† distant about 2½ leagues from the eastern end of the Surat Passage, is a considerable town, situated on the banks of a river, which falls into the sea by several branches, separating the low country into islands; and this low plain, formed between the foot of the mountains and the sea, is partly inundated during the rainy season. This was formerly a place of great trade, frequented by ships from the different countries in Europe, as well as those from China and all parts of India, when the kingdom of Achen was powerful and flourishing; but it is now become feeble and much reduced, many of the rajahs or chiefs, who formerly were tributary to the King of Achen, being now independent. Gold, camphor, pepper, sulphur, beetle-nut, &c., used to be exported, and there is still some trade carried on by small vessels from different parts of India, but large ships seldom touch here unless to procure refreshments. Rice, bullocks, poultry, vegetables, and fruits, may be generally got in abundance, and plenty of fresh water. The principal entrance of the river has a shoal bar, which a boat can hardly pass at low water; but vessels from 20 to 30 tons burthen may enter the river at high water, when the rise of tide is about 7 feet on the springs; high water at 9 hours on full and change of moon, subject to irregularities from winds or other causes. The common anchorage of the road is in 8 or 9, to 10 or 14 fathoms water, about 2 or 3 miles off the entrance of the river, in lat. 5° 38′ N., with it bearing S. ½ E. to S. E. Here vessels are sheltered from the S.W. monsoon, which generally prevails from April to November; in the other season the easterly winds are seldom strong, but north-westers happen at times; these blow into the Bengal Passage with great force, and require good ground-tackle to ride secure against them. In the road and near the shore land and sea breezes are often experienced in *Achen. Supplies. Tides. Anchorage.*

* The China fleet, homeward bound, touched at Achen, and proceeded to sea by the Surat Passage; the fleet bound to Bengal also went through it, and stopped at Achen for water, in November, 1800.

† Captain Basil Hall, R.N., in 1814, made Achen Road in lat. 5° 36′ N., lon. 95° 24′ E., by lunar observations. Captain Bradshaw made the Flagstaff in lat. 5° 35′ N.

both seasons, but the land breezes are very partial, seldom extending beyond the islands. The king of Achen resides generally at Tulosamaway, and Achen being seldom visited by him, it has in consequence been little frequented lately by trading vessels; the chief places of trade to the eastward of Achen are Pedir, Bourou, and Tulosamaway. Ships trading here ought to be on their guard, and not put too much confidence in the people with whom they trade, nor suffer them to be much in their debt; when this has been the case, many ships have been cut off, as the easiest manner of settling their engagements. The king of Achen is often in a state of warfare with some one or other of his subjects; and his fleet, sometimes consisting of 12 or 14 snows and brigs, usually cruize from Tulosamaway round to Soosoo on the west coast.

Caution.

The Golden Mountain.

GOLDEN MOUNTAIN, or QUEEN'S MOUNTAIN, situated a little distance inland, about 7 or 8 leagues to the eastward of Achen, in lat. 5° 27′ N., lon. 95° 47′ E., or 1° 49′ East from the south end of Great Nicobar, by chronometers, is a high regular cone about 6,900 feet above the level of the sea, and may be seen about 92 miles from the deck of a ship in clear weather. When it bore S. S. W., distance from us 88 miles, the summit was seen from the deck a little elevated above the horizon. In clear weather, this beautiful mountain, when visible, is a good mark for pointing out a ship's position in entering Malacca Strait, when her distance from the islands is too great to admit any of them, or the land near Achen Head, to be discerned. There is a small mountain close to the Golden Mountain, called in some old journals the Orphan: the natives know these mountains by the appellation of Ya Mura, Ya Muree.

To sail from Achen.

Ships departing from Achen may, if bound to the northward, pass out by the Bengal, or Malacca Passage, as circumstances render prudent; those bound to the westward in the S. W. monsoon might venture out by the Surat Passage, if the weather be favourable; but the Bengal Passage is preferable, keeping close to the islets off the north end of Pulo Brasse, where a current will assist them in getting to the westward. This has been already observed in the concluding chapter of volume first of this work, where directions are given for sailing to and from Malacca Strait and Achen in the S. W. monsoon;* and a general description of winds and currents near Achen Head and the Nicobar Islands will be found in the section of the same volume which describes the outer passage to places on either side the Bay of Bengal; nevertheless, a brief statement of the prevailing winds and currents may here be of utility.

MONSOONS.

S.W. monsoon.

THE SOUTH-WEST MONSOON generally begins about the end of April, or rather early in May, between Achen Head and the Nicobar Islands, and abates in October; although in October, and also in November, westerly winds frequently prevail. During the strength of this monsoon, from May to September, the weather is often cloudy, with squalls and heavy showers of rain at times: the current then generally sets with the wind to the eastward into Malacca Strait, but more commonly to N. Eastward; it is, however, liable to change, and set to the southward at times, particularly when the wind is light and veers to the westward. When the current in the S.W. monsoon is running in betwixt the South Nicobar and the islands off Achen, to the N. Eastward, there is generally a contra or eddy current setting along the coast of

Current.

* See also directions relative to sailing to, or from Achen, in the two sections of this work, where Rangoon and Mergui Rivers are described.

Pedir to the westward, which continues to set in that direction amongst the Achen Islands to seaward: therefore, all ships bound from Malacca to the westward should in this season keep near the coast of Pedir, and after reaching Achen they may go out by the Surat Passage, if the weather be very favourable, or through the Bengal Passage in preference, observing to keep close round the islets off the north end of Pulo Brasse, then take every advantage to tack with the shifts of wind favourable for getting to the S. Westward.

To work out of the Strait of Malacca during the S.W. monsoon.

The King George, by beating in the open sea between Pulo Rondo and the Nicobars, in July, 1791, was 14 days getting a few leagues to the westward of Pulo Brasse; had she passed inside of Pulo Way, and proceeded through the Bengal Passage, she probably would have saved most of that time.

Passages of several ships.

The Worcester, in May, 1795, bound to Bencoolen, working in the same manner, too far out from Sumatra, could not get round Achen Head, and returned to Prince of Wales Island. She sailed again from thence June 16th, steered along the Pedir Coast, anchored at Achen on the 26th, and from that place got speedily out of the Strait, by passing close round Pulo Brasse.

Many other ships have been greatly delayed by endeavouring to work out between the Nicobars and Pulo Rondo, against strong winds and N. Easterly currents in the S. W. monsoon; not knowing that a favourable current generally prevails close to the Sumatra coast, and among the islands.

THE NORTH-EAST MONSOON mostly prevails in the entrance of Malacca Strait, between Achen Head and the Nicobar Islands, from November to May, which is the fair season. In October and November the winds are variable, frequently at N. W. and West; although in some seasons the N. E. winds set in regularly in November. From this period to March, the N. E. monsoon is strongest, but at times it is liable to veer to the northward or N. W.; and westerly breezes, of one or two days' duration, have been experienced in every month when the N. E. monsoon should prevail. Late in March, or early in April, the N. E. and northerly winds become light and variable. When the N. E. monsoon blows steadily, the current generally runs with the wind out of the strait to the westward. When the wind draws to the northward, the current a little outside the Achen Islands sets to the southward between them and the Nicobars; and when the wind veers to West or S. W. it *generally* runs into the strait, or to the North-eastward; so that the current there is, in its direction and velocity, *mostly* governed by the wind. This is, however, not *always* the case, for at times the current is found to run obliquely, or contrary to the wind, requiring the navigator to be cautious when no observations are obtained for the latitude, more particularly when running for the entrance of the strait during thick weather in the S. W. monsoon.

N.E. monsoon.

Current.

In the entrance of Malacca Strait, near the Nicobar and Achen Islands, and betwixt them and Junkseylon, there are often very strong ripplings, particularly in the S. W. monsoon; these are alarming to persons unacquainted, for the broken water makes a great noise when a ship is passing through the ripplings in the night. In most places, ripplings are thought to be produced by strong currents, but *here* they are frequently seen when there is no perceptible current. Although there is often no perceptible current experienced, so as to produce an error in the course and distance sailed, yet the surface of the water is impelled forward by some undiscovered cause. The ripplings are seen in calm weather approaching from a distance, and in the night their noise is heard a considerable time before they come near. They beat against the sides of a ship

Ripplings of the sea.

with great violence, and pass on, the spray sometimes coming on deck, and a small boat could not always resist the turbulence of these remarkable ripplings.

Directions.

Ships leaving the strait in October or November, when westerly winds are found to prevail, should follow the track already recommended for ships bound out in the S.W. monsoon, that they may benefit by the westerly set on the coast of Pedir, and among the islands, or at least avoid the current running into the strait in the offing.

Passage of several ships.

The Thames, in November, 1800, bound out of the strait to Europe, had the winds from S. W., with a current setting in between Pulo Rondo and the South Nicobar, which prevented her getting out to the southward of the latter; she was therefore obliged to stand to the North-westward, and passed out betwixt Car-Nicobar and the Little Andaman: from thence she made a good passage to St. Helena.*

The Camden, from Prince of Wales Island, in 1805, could not get out to sea between Pulo Rondo and the Nicobars, owing to light winds, and currents setting into the strait; and she was obliged to bear away, November 5th, for Prince of Wales Island, to get an additional supply of provisions.

The Rockingham and fleet having arrived at Achen by the Surat Passage, remained there eight days, procuring water and other necessary supplies. November 15th, 1800, she sailed from thence through the Bengal Passage, with a current setting out of it, and on the following day, having been close hauled with the wind at W. S. W. and S. W., made the Nicobar bearing W. ½ N., distant 8 leagues, the current having run 44 miles to the N. Eastward during the 24 hours.

FROM ACHEN HEAD TO BANCOONGONG BAY.

West coast of of Sumatra.

FROM ACHEN HEAD, the general direction of the west coast of Sumatra to Flat Point, its southern extremity in lat. 5° 55′ S., is about S. E. ½ S., and the distance 294 leagues, the equator dividing it nearly in equal parts. Numerous small islands and dangerous shoals are interspersed along different parts of this extensive coast, and a chain of large islands, farther out, stretches parallel to it, at the distance of 18 or 20 leagues, between some of which islands there are safe channels.

Coast from Achen Head southward.

About 4 or 5 leagues nearly S. ½ E. of Achen Head, on the north side of a small point of land, is a cove called Siddo Harbour, where cattle may be obtained; and from 12 to 25 fathoms are good depths to preserve in coasting along. Off this place, and to the northward, lie some rocky islets at a small distance, the largest of which is called Pulo Roosa; and 3 leagues farther southward lies Saddle Island, with contiguous rocks above water, distant 1 or 2 miles from the shore. There is a peaked hill inland, to the eastward of Saddle Island, and two bays between it and Siddo Point.

Coral Bank.

In about lat. 5° 0′ N. there is a bank of coral and sand, about 3 or 4 leagues off shore, said to have 5 fathoms water on it, and 30 fathoms close to it all round. Capt. Bennet says, it bears about N. W. from Pulo Roosa, with only 4 fathoms rocks on it

* Captain Williams, of the Thames, observes, that notwithstanding he beat down the China Sea against the S. W. monsoon in August and September, had he not lost much time in endeavouring to work round the islands off Achen Head, he probably would have reached St. Helena as soon as the ships which had left China about two months before him, and pursued the eastern route.

in some places, and that he had passed over it several times in a small vessel. Capt. Ashmore had 7 fathoms on the southern part of this bank, about 9 miles W. ½ S. from the body of Pulo Rhio, and he crossed it several times in from 10 to 13 fathoms, between this situation and lat. 5° 19′ N., and states it to be a ridge, about three-quarters of a mile in breadth, extending parallel to the coast nearly as far as Achen Head, having 29 and 30 fathoms ooze on the inside, and a little outside, no ground.

OOJONG DAHWAY is a bold rocky headland, in lat. 5° 5′ N., from which point a survey of the coast, as far to the southward as Rigas, was made by Mr. James D. Gilles, in 1834, who gives the following directions for the Pepper Ports comprehended in that interval. Oojong Dahway.

"About half a mile W. by S. from Oojong Dahway lies a cluster of rocks above water, called Battoo Booroo; there appears to be a clear passage between them and the point, in which we got one cast of 12½ fathoms, hard bottom; these rocks are steep to all round, except on the N.W. part, where a coral reef extends off about a quarter of a mile." Mr. Gilles' directions.

"A bay is formed between Oojong Dahway and Oojong Po, the next point to the S. E., where there is probably safe anchorage in a N.W. wind."

"OOJONG PO is formed by two peninsulas; the outer one, which is the extremity of the point, is a small, round, green hill without trees, and less elevated than Oojong Dahway; the surf generally breaks over the rocks which join it to the inner peninsula. On the shore of the bay above mentioned, about half-way between the points, is Timbegah Hill, which is very remarkable, standing close to the water's edge, with no high hill near it, and can be seen at a great distance." Oojong Po

"FROM OOJONG PO TO DIAH there is a coral reef, with from 2 to 8 fathoms, projecting about a mile from the shore, with 14 fathoms mud near the outer edge. There appears to be safe anchorage off DIAH, with Diah River (called Quala Lambassoa) N. N. E. and Pulo Limpan East one mile, in 12 fathoms mud." Oojong Po to Diah.

"The land near the shore, from Diah to the village of No, in lat. 4° 55′ N., is quite low; the high land, however, approaches near the coast, leaving only a narrow strip of low land not perceptible in some places from the offing." Between Oojong Dahway and Oojong Soobahng the soundings are deficient, and therefore a good look-out is here necessary.

"PULO LIMPAN, though quite small and lying close to the main, is easily distinguished from the offing by its reddish cliffs, about 60 feet high, and the cluster of trees on its summit. It bears S. by E. ¼ E., 2 miles from Diah River. A coral shoal projects from it to the westward a short distance. Pulo Limpan is an excellent mark, and one that it is scarcely possible to mistake." Pulo Limpan.

BARBAH WEE BAY, formed by the points Oojong Soobahng, or Goobah, and Oojong Barbah Pahroa, has several coral shoals in it, rendering an approach to it difficult and dangerous to a stranger. The one off Soobahng Point to the S.W., and which extends about a mile from it, has only 12 feet on it, and generally breaks. This shoal is called by the natives, Loongcarp* Soobahng. There is another shoal bearing Barbah Wee Bay.

* Loongcarp in the Achenese language signifies literally a shoal that breaks, but is applied exclusively to shoals which are detached.

West, three-quarters of a mile from a point (Oojong Chenam Proeng) in the middle of the shore of the bay. The least water on this shoal is $2\frac{1}{4}$ fathoms, with 9 or 10 fathoms near it on the outside. But the most extensive and most dangerous shoal, lying very much in the way of vessels, is the one off Barbah Pahroa Point, called Loongcarp Barbah Pahroa. Its centre bears from this point W. by N., the outer extremity 2 miles distant. It is a mile in extent East and West, and three-quarters of a mile in breadth. Between the shoal and the point there is a clear passage with 14 fathoms mid-channel, muddy bottom. The least water found on this shoal by Mr. Gillis was $16\frac{1}{2}$ feet, although he thinks there may be less in some places. It breaks very heavily when there is any swell. There is a shoal projecting about 200 fathoms from Barbah Pahroa Point.

The best anchorage in Barbah Wee Bay is with Barbah Pahroa Point S. E. by S. and Chenam Proeng Point N. E. by E. $\frac{1}{2}$ E., in 11 fathoms, soft clay.

" A stranger should not attempt to enter this bay without some one who knew for a certainty the names of the points, as both Soobahng and Chenam Proeng Points are low, and have nothing remarkable to distinguish them." The former, however, may be known by being about a mile S. S. E. of Pulo Limpan.

" To pass between the shoals, bring Chenam Proeng Point to bear E. $\frac{1}{2}$ N., and keep it in this bearing until Pulo Limpan bears N. by E.; a direct course about E. $\frac{1}{2}$ S., or E. by S., may then be steered for the anchorage."

" Coming from the southward with a free wind, it seems advisable to pass between Pahroa Point and the shoal; in which case Pulo Limpan should be kept N. $\frac{1}{2}$ W. until Pahroa Point bears E. by S., then steer direct for the anchorage. With a southerly wind and a northerly current a vessel passing outside would be liable to be swept down on Soobahng Shoal. There are four villages in the bay."

" Between Pahroa Point and Pulo Riah there appears to be no danger but what is visible, except close to the shore."

" It may be proper to observe, that the inhabitants of Barbah Wee Bay and Diah are considered less worthy of confidence than any others on the coast."

Pulo Riah.

" PULO RIAH is about $3\frac{3}{4}$ miles in circumference, and about 300 or 400 feet high, covered with trees, and has a level appearance at a distance. On the South and S.W. sides there are several rocky cliffs, from 30 to 80 feet high. Pulo Riah may be known by the small islet, called Pulo Mahnay, close to its western extremity, with 18 coconut trees on it (March, 1834). This islet is yellow sand-stone, having cliffs about 40 feet high. Pulo Riah is surrounded by a coral reef which always breaks, and which projects in some places two cables' lengths from the shore. There is no pepper produced on the island, and its inhabitants have no connection with those on the main."*

In the bay formed by Pulo Riah and the coast to the northward there are several pepper ports on the main; the principal one is called Telloo Crooet, bearing E. $\frac{1}{2}$ N., 2 miles from Pulo Mahnay. The usual anchorage for taking pepper at this port is on the N. W. side of Pulo Riah; but a vessel may lie on the S. E. side quite as near the town, and be sheltered from the N. W. winds. A vessel bound to Telloo Crooet from the northward may pass mid-way between the N. W. point of Pulo Riah and the main, and anchor with Pulo Mahnay S. W. and the eastern extremity of Pulo Riah S. S. E. $\frac{3}{4}$ E. in about $9\frac{1}{4}$ fathoms, mud. Bound in from the southward, Pulo Mahnay should

* It is stated in the former edition of this work, apparently on the authority of Captain Bradshaw, that Pulo Rhio yields from 2,000 to 3,000 pecules of pepper annually.

not be rounded nearer than a third of a mile; when Telloo Crooet Point is seen, or when Pulo Mahnay bears E. by S., a direct course may be steered for the anchorage. It is not advisable to anchor nearer to Telloo Crooet than the above anchorage, as the bottom a little farther in becomes sandy. In this position, with a N.W. gale in case of parting or driving, there is a chance of escape through the passage between the island and the main. The distance between them is about one-third of a mile, but the passage is made quite narrow by three or four small rocks, each about the size of a haycock, lying near the surface, with from 2 to 6 feet on them. They are about mid-channel, near the N.W. part of the passage. Close to the rocks, on the side nearest to Pulo Riah, there are 7 fathoms, increasing to 8 and 9, irregular soundings towards the island; within 60 or 70 fathoms of the sandy point (the N. E. point of the island) it shoals suddenly to $3\frac{1}{4}$ and 2 fathoms. A vessel passing through this channel should keep about a quarter of the width of the passage *from* the island (counting from the trees); at this distance, passing from the N. W., there will be 8, 9, 7, $11\frac{1}{2}$, and 7 fathoms, probably not less than 7. Between the rocks and a point of sand, which extends 50 fathoms from the main, there are about $4\frac{3}{4}$ fathoms, coral; and a ridge of coral, with $4\frac{1}{4}$ and 5 fathoms, extends from the rock in a S. S. E. direction parallel to the main nearly through the passage. Pulo Mahnay is in lat. 4° 52′ N.

“BARBAH NEPAH POINT, called also Oojong Glass, may be known by its ash-coloured cliffs, and by a small rock separated a few feet from the point; also being the first point S. E. of Pulo Riah. A vessel may anchor anywhere between Barbah Nepah Point and this island. Barbah Nepah village is about half a mile inside the point. There is a river close to the village, with good water. Between the river and point coral reefs extend about a quarter of a mile off shore.” To take pepper at Barbah Nepah, a vessel may anchor with the point bearing S. S. E., distant about three-quarters of a mile, in 10 fathoms, mud. This pepper port belongs to Telloo Crooet. Barbah Nepah Point.

“Between Barbah Nepah Point and Pulo Cass, at a moderate distance from the shore, not coming under 10 fathoms, there appears no danger.”

“PULO CASS is considerably elevated, and, like all the islands between Pulo Riah and Catapang Pahse, is a mass of black rocks, having the appearance of iron ore, and covered with trees. The S. W. part is much higher than the N. E., and bearing S. E. it resembles a spoon with a short handle, bottom upwards; from the N. W. point (on the *outside*) to the S. E. point it is quite steep, having 10 fathoms, mud, close to the rocks. From the N. W. point (on the *inside*) to the S. E. point there is a coral reef projecting from 10 to 50 fathoms from the island, farthest from the part next Pulo Kecheel; in most places the edge of the reef is distinctly visible, with 5 or 6 fathoms close to it. The anchorage is safe all round this island, but the best is with the S. E. point of the island about W. S. W., in $7\frac{1}{2}$ fathoms, mud, rather nearer to the island than the main, to avoid a sand-spit which projects a short distance from the shore. Here a vessel is sheltered from all winds that blow with much violence on this coast, and in weighing may pass out on either side of the island, passing out to the N. W. from the anchorage; the least water, keeping mid-channel, will be $5\frac{1}{2}$ fathoms in the most narrow part between Patty Point and the N. E. point of the island. Bound into the anchorage, do not round the S. E. point of Pulo Cass at a less distance than 50 fathoms, as the reef extends from the point about 30 or 40 fathoms, with 3 fathoms on it, having $9\frac{1}{2}$ fathoms close to the outer edge.” Pulo Cass.

Patty.

"PATTY is a small pepper port inside Pulo Cass; joining the town is a small green hill covered with coco-nut trees, which can be seen some distance from the southward."

Pulo Kecheel.

"PULO KECHEEL is a small islet, with trees on it, about half a mile from Pulo Cass; a range of 20 rocks above water project in a straight line from Pulo Kecheel; in a westerly direction, about a quarter of a mile, there are 7 fathoms close to the outer one. On the side next Pulo Cass there are 3 or 4 fathoms coral close to them, deepening with some regularity towards that island; but the bottom is hard, at least half-way, and the vessel anchoring on this side of Pulo Cass should keep nearer to the island than the rocks, where the bottom is soft, in $8\frac{3}{4}$ fathoms. We lay several days outside, with Pulo Cass bearing about East, distant 1 mile, in 12 fathoms excellent holding ground."

"From Pulo Cass to the Pehjabah Islands there appears to be no danger. About $1\frac{1}{2}$ miles S. S. E. from Pulo Cass I found a rocky bank, least water $8\frac{3}{4}$ fathoms, but the natives say there are 7 fathoms; the extent of this bank in a N.W. and S. E. direction is about 1 mile. This was the only time that I got a cast of hard bottom 1 mile from the shore, between Diah and Catappang Pahse, excepting the shoals placed on the chart."

The Pehjabah Islands.

"THE PEHJABAH ISLANDS form the harbour of Telloo Goolumpung (one of the most considerable pepper ports on this part of the coast); they are distant about 1 mile from the main, are quite small, and lie close together. The largest is called Pehjabah Besar; the smallest and outer one is called Pehjabah Kecheel. They are both about the same height; the smallest has a round appearance on top, with a smooth outline, the trees being more uniform in height than on the other, which has several high trees on it, giving it a more irregular appearance. There is a coral reef, with 2 fathoms, extending about 150 fathoms from the inside of these islands. S. 6° W., distant 200 fathoms from the outer island, is a rock 15 or 20 feet high, with 11 fathoms close to it on the outside; there is also another rock, nearly even with the water's edge, which always breaks, bearing S. 11° E. from the same island. Inside the Pehjabahs near the main is Pulo Cleung; this island is larger and higher than the Pehjabahs, about 300 or 400 feet high, but, lying close to the main, is not so conspicuous as those islands: it is bold all round, except on the inside, and, like the Pehjabahs, is covered with trees. Telloo Goolumpung Point, or peninsula, is a green hill, about as high as Pulo Cleung, with only a few scattered trees and a house on the summit. Like all the islands in this vicinity, it is based with rocky cliffs, and is connected with the main by a low sandy isthmus, and at some bearings has the appearance of an island."

Telloo Goolumpung.

"TELLOO GOOLUMPUNG.—Vessels bound to Telloo Goolumpung usually pass between the Pehjabahs and Pulo Epoo Cheechem. The only danger in the way is the small rock before mentioned, which bears from the little Pehjabah S. 11° E., distant rather more than a third of a mile: it always breaks, and there are 10 fathoms close to it. Telloo Goolumping Point has 8 fathoms on the outside close to the cliffs. The best anchorage at Telloo Goolumpung is with the Pehjabahs N.W. and Pulo Cleung N.E. by N., in 10 fathoms mud and sand; but in shipping pepper it is customary to anchor much nearer the town on a line from Telloo Goolumpung Point to Pulo Cleung, about half-way, in 8 fathoms. A vessel lying here from April to September should moor with two heavy anchors to the N.W., as the bottom is sand, and there is no room to drive, nor means of slipping and putting to sea."

"PULO CHEECHEM is a high bluff land, similar in appearance on most bearings to a Scotch cap; rocks above water extend in a S. S. E. direction, from the S. E. part about a cable's length, with 8½ fathoms close to the outer rock. There is also a coral reef, with 2 fathoms, extending about 150 fathoms from the N. E. part of the island." Pulo Cheechem.

"PULO EPOO CHEECHEM, which is situated to the westward of Pulo Cheechem, within 150 fathoms, is much lower than the latter island, and is not visible above the horizon when Cheechem is seen distinctly. Bearing about N. N. E., or from the opposite point, it resembles a gunner's quoin, though the outline is rather uneven. It has 10 and 11 fathoms close to on the outside. East from Pulo Cheechem about three-quarters of a mile are three black rocks, having 5½ and 7 fathoms close to them; there are no rocks or shoals near them on the outside; on the inside there are a few small rocks even with the water's edge." Pulo Epoo Cheechem.

"RAHNOO, a considerable pepper port belonging to Selloo Goolumpung, is situated about S. 72° E., 1½ miles from Pulo Cheechem. The best anchorage at this port is with Pulo Cheechem N. 35° W., and the southern black rock N. 50° E., in 10 fathoms mud and sand, distant 1 mile W. 7° S. from Rahnoo Nearn to the town; the bottom is sand, and I had several casts of coral and shells." "The natives will insist upon the vessels coming much nearer; but in general anchoring on this coast the safety of the vessel should be considered more than the convenience of shipping pepper, as there are few ports on the coast of Sumatra where the natives will furnish more pepper in a day than can be easily shipped if the vessel lies within about 1¼ miles." Rahnoo.

"About half a mile to the southward of Rahnoo is a small island, called "PULO EPOO RAHNOO, to distinguish it from Pulo Epoo Cheechem; though lying within a few fathoms of the shore, and joined to it by rocks, it is considered an island and distinct from the coast, it being so entirely different, the shore from Telloo Goolumpung Point to Rigas being quite low, the trees growing close to the sandy beach." Pulo Epoo Rahnoo, on the contrary, is a pile of rocks, about 50 feet high, of a kind similar to the other islands, with trees on the summit; there is also a rock above water nearly joining the island on the N.W. side. A knowledge of this island is useful, to take bearings to avoid a dangerous rock which bears from it W. 17° S., distant three-quarters of a mile, and which seldom breaks. I examined this shoal twice, and found the least water at spring tides 11 feet. The shoalest part is not more than 20 or 30 fathoms in extent, and very ragged and uneven, with 11 and 11½ fathoms mud close to the outer edge; it probably is not coral, as the bottom could not be seen, but similar to the rocks above water in this neighbourhood. When on the shoalest part the outer points of Pulo Epoo Cheechem and Pulo Pehjabah Kecheel were exactly in a line; by keeping the Pehjabah in sight to the westward of Pulo Epoo Cheechem, you will be sure to be *outside*, and when Pulo Epoo Rahnoo and the peak of Rigas hill are in one about a quarter of a mile to the S. E. of the shoal. There is also a cluster of rocks above water bearing S. 8° W. from Pulo Epoo Rahnoo, distant about one-third of a mile; close to them, on the outside, are 8 and 9 fathoms. Between Pulo Epoo Rahnoo and Rigas Point there is a bay, full of coral shoals; in this bay is a small pepper port, called Jahbee." Pulo Epoo Rahnoo.

"RIGAS POINT, or OOJONG BAHROOS, is a low rocky point, covered with trees, the extremity a little more elevated than the land joining it; a short distance Rigas Point, or Oojong Bahroos.

back there are one or two hills with a number of scattered trees. In the direction of Pulo Cap, near the point, there are 8½ fathoms hard bottom; one quarter of a mile farther in the same direction there are 10 fathoms mud. From the point towards Rigas Bay the shore is lined with a coral reef as far as Oojong Ramboon. About half a mile from Rigas Point it projects in one place 200 fathoms from the shore; this part is dry in some places, with a small detached rock, which always breaks. Oojong Ramboon is a steep hill, forming the N.W. point of Rigas Bay; the passage between it and Roosum is about a quarter of a mile wide, with several rocks above water."

Pulo Cap, or Pulo Rangas.

" PULO CAP, or PULO RANGAS, known to the natives only by the latter name—(when inquiry is made for Pulo Cap they suppose Pulo Cass is meant)—is a pile of rocks, 50 or 60 feet high, covered with trees, several of which are lofty."

" The frequent rains on this coast cover every thing with vegetation; large trees are seen growing on rocks where there is apparently little or no soil, and every mountain is closely crowded with lofty trees from the base to the summit. The highest trees on Pulo Cap are just visible in a clear day at 17½ miles' distance, the eye at an elevation of 20 feet. On the inside of the island, next the main, there is a coral bank, with 3¼ and 5 fathoms projecting a cable's length, with 12 fathoms close to the outer edge. Near the N.W. point, distant 90 fathoms, is a small rock, which always breaks; on every other side it is bold, having 12 and 13 fathoms close to it."

" A vessel may anchor on either side of Pulo Cap within a quarter of a mile, to take shelter from a N.W. or S. E. wind, in about 12 and 13 fathoms, mud. On the S. E. side there are two high rocks, nearly joining the island, steep to all round. There is also good anchorage anywhere inside of Pulo Cap, in the direction of Rigas Point, or the Pahse Rock, level clear bottom 11 and 11½ fathoms, olive-coloured mud and fine sand. We lay 12 days at a single anchor, surveying Rigas harbour and coast half-way between Pulo Cap and the Pahse Rock, in 11½ fathoms, blowing fresh at times from the southward with a strong lee current. Though the bottom is not soft, we found some difficulty when we weighed anchor in breaking ground."

" Between Pulo Cap and the main are three small rocks, about 3 or 4 feet high. The nearest one to this island, bearing E. by S., distant half a mile, is called *Cap* Rock; the one which lies within three-quarters of a mile of Pulo Roosum, *Roosum* Rock; the third, which bears from the west point of the large Pahse S. 43° W., distant half a mile, is called *Pahse* Rock. These rocks give the place a dangerous appearance; but there is no more danger than if they were so many wharfs, as there is deep water within 5 or 6 fathoms of them all round. About N. 25° W., a quarter of a mile from Roosum Rock, is a small steep rock, with 2¼ fathoms; but this is not in the way of vessels."

Rigas Islands. Pulo Roosum.

" RIGAS ISLANDS.—PULO ROOSUM, the largest of these islands, is about half a mile long, and lies across the entrance to Rigas Bay; it is high on the outside, with steep rocky cliffs, and covered with trees: on the inside there is a small space of low land with a number of coco-nut trees. PULO ENGAHNG (pronounced as nearly as possible as one syllable) is the next considerable island; it is a pile of steep rocks, also covered with trees. PULO SAMMOTE is low, with no rocky cliffs, and has a number of trees on it. PULO POOGAHSE is a rock, or rather two rocks joined; on the top are a few bushes or small trees; nearly all the land outside or near a vessel in the harbour

is high; the only marshy land is on the main at the N. E. part of the bay. Chellung Peninsula is higher than the islands, being 400 or 500 feet in height, with lofty rocky cliffs. Like all the land in the vicinity of Rigas (excepting that under cultivation), it is closely covered with trees from the summit down to the cliffs: it is joined to the main by a low sandy isthmus, and appears very much like an island. The part called Oojong Chellung forms the southern point of Rigas Bay."

"OOJOONG BATTOO TOOTUNG is about five-eighths of a mile inside Chellung Point; it is also rocky and high: between these points is a cove, one-third of a mile deep, with a sandy beach." Oojong Battoo Tootung.

"RIGAS HARBOUR is formed by Pulo Engahng, Pulo Sammote, and Oojong Battoo Tootung, the depths from 4 to 6 fathoms; it is about half a mile in length and one-third of a mile in breadth: though this bay is 4 or 5 miles in circumference, this is the only anchorage where a vessel can lie in safety; nearly the whole of the remainder is covered with coral reefs, dry in many places at low water. Inside Pulo Roosum, between the reefs which join that island and those extending from Pulo Poogahse, there is a clear space, with 3¼ and 4 fathoms, sand, where there is sufficient room for a vessel to heave down, and where the water is always smooth. By buoying the channel, a vessel could be warped in between Roosum and Engahng; there is also a passage round the north side of Roosum, but more difficult of access. About East from the anchorage in the harbour, near Oojong Battoo Tootung, is a small cove, where a vessel might heave down to the rocks on the shore." Rigas Harbour.

"The town of RIGAS is on the N. W. side of the bay; it is a considerable pepper port, with the small ports of Chellung, Battoo Tootung, Jahbee, and Pahng-ah, attached to it. Battoo Tootung village is in Rigas Bay, Chellung village is on the shore of a bay inside the Pahse Islet; there are many coco-nut trees near this village, and a fort on a hill, which can be seen outside the Pahse Islets."

"A vessel bound to Rigas should pass between the Pahse Rocks and Pulo Cap. The entrance to the harbour is between Pulo Roosum and Oojong Chellung: there is nothing in the way except a small rock, which bears from Oojong Chellung N. 64° W., distant a little more than half a mile. This may be avoided by keeping the southern point of Pulo Sammote (bearing about N. E. by N.) in sight to the southward of Pulo Engahng. This will carry you mid-way between the rock and Chellung Point; when within about half a mile of the point, keep more to the eastward, passing about 100 fathoms to the southward of Pulo Engahng, or you may bring Oojong Chellung to bear N. E., and steer directly for it, passing it at any convenient distance, as it is quite bold, having 7 fathoms close to it; from that depth it gradually shoals to the anchorage, which is in about 5¼ fathoms, mud, with the southern extremity of Pulo Engahng S. 64° W. and Oojoong Battoo Tootung S. E., distant about 150 fathoms. This point may be known by its being the first after passing Oojong Tellung, and also by its being the eastern part of a cove formed by these points, which will be passed by a vessel entering the harbour. A mark for the anchorage is to bring Pulo Poogahse in a line with the entrance of Rigas bazaar and the southern extremity of Pulo Engahng, as above, S. 64° W. Between Pulo Engahng and Pulo Sammote there is a line of coral reefs (dry in some places at low water), which forms the N.W. boundary of the anchorage."

"A vessel in Rigas Harbour is nearly land-locked, and it is considered one of the

best on the coast; it is, however, well known to be one of the most unhealthy; and being so regarded, it was thought important to find a safe place to anchor outside where it would be convenient to ship pepper, supposing such an anchorage, where the vessel would have the pure sea-breeze, would be as healthy as any part of the coast."

"We found a place inside Roosum Rock (as will be seen by reference to the plan of Rigas Bay), where the bottom was very fine olive-coloured sand, or sand and mud: we did not get a single cast of any other kind of bottom near the anchorage, which is with Roosum Rock bearing S. 76° W., distant 200 fathoms, and the extremity of the rocks on Rigas Point just touching the inner point of the Pehjabah Besar in 9 fathoms."

"A vessel appears to be very near the Roosum Rock, but as she swings in that direction only with the land wind, no wind from that quarter can ever force her on it if she be moored with a good scope, which should be done without delay, as the currents and variable winds will soon foul the anchor. From October to April the heavy anchor should be placed to the southward and stream to the N. W., and the reverse after April has commenced, as the N.W. are then expected. A buoy placed as a mark to anchor would be useful previous to entering this anchorage."

"A vessel here will be precisely the same distance from the town of Rigas as at the anchorage in the harbour, about $1\frac{1}{4}$ miles; and though we had fresh breezes from the southward, the boats had no difficulty in bringing off pepper. This anchorage is not near so safe in a gale as the harbour, but at other times quite as much so. On this coast gales are of rare occurrence, and they seldom blow directly on shore, but more frequently along the coast. With N. Westers (which, with few exceptions, are the only winds that blow with much violence) there probably would not be so much sea but that a vessel could ride with safety. If there should be, there is abundance of room to slip and go into the harbour or to go to sea, passing on either side the Pahse Rock. At such a time, the position of the small rock which lies in a line with the harbour would be as well known by its constantly breaking as if it were above water. A vessel out of season for pepper, and waiting for the crop, which is frequently the case, should, by all means, lie outside the harbour until the pepper is ready. Should the anchorage inside Roosum Rock be considered unsafe, she may anchor anywhere inside Pulo Cap; but the best place appears to be between Cap and Roosum Rocks, where the bottom is soft, and where it would be convenient to communicate with the town. Telloo Goolumpung, Pulo Riah, and all the ports in this vicinity, are quite healthy."

"In passing to and from the shore, boats should be cautious to avoid a coral spit which projects from the N.W. part of Pulo Roosum. This breaks sometimes, with intervals of 10 or 15 minutes; also a small rock, which lies near the edge of the reef, between Rigas and Ramboon Points: this is nearly even with the water's edge, but when the sea is smooth it breaks only once in 8 or 10 minutes."

Rigas Hill, or Booket Qually.

"RIGAS HILL, or BOOKET QUALLY.—This is one of the best marks on the coast of Sumatra; it is very high, and can be seen off deck in clear weather 43 miles. It has no high hill near it, and is easily known: nearly the whole of the south side is cleared, and has the appearance of land under cultivation. The Peak is covered with trees, and bears from Rigas town about N. by W., distant $1\frac{1}{2}$ miles. Bearing about S. E. it makes *two* peaks, the northern one lower and smaller than the other, each side of the hill sloping very gradually, the S. E. terminating in Rigas Bay; bearing

N.W., it makes with only *one* peak, the sides appearing much steeper than when bearing S. E. This hill can be seen in clear weather near Oojong Booboon; it then appears to be the western extremity of the coast, standing out separate and distinct like an island."

"THE PAHSE ISLETS are two small groups of rocky islets, with trees on them; they lie to the S. E. of Chellung Peninsula, the outer one distant $1\frac{1}{4}$ miles: the passage between them and the peninsula is intricate and unsafe; there appears to be no danger near them on the outside except the Pahse Rock, which is above water. The sides of this rock are perpendicular, having 10 and 11 fathoms within a few feet of it; there are also 10 and 11 fathoms near the islets. Inside the Pahse Islets is Chellung Bay, which is easy of access, and where there is excellent shelter from the N.W. winds. A vessel compelled to leave any of the anchorages to the northward in a N.W. gale should anchor anywhere between the islets and the main, in smooth water and a moderate depth. The existence of a shoal, however, near the anchorage, the position of which is not known, will prevent this harbour from being used until it has been ascertained. N. 77° E. from the largest of the Pahse Islets, distant nearly $2\frac{1}{2}$ miles, is a village on the main, called Catappang Pahse; it may be known by a cluster of coco-nut trees and several houses." The Pahse Islets.

"PANGHAH.—Four or five miles to the S. E. of CATAPPANG PASHE is a small pepper port, called Panghah; the coast near here is low with a sandy beach, and there is no mark as a guide to its situation but a small break in the arroon trees. The chart which these directions are intended to accompany extends no farther than Catappang Pahse; but as there is no chart or sailing directions for the coast from Oojong Booboon, and it is very imperfectly known, it is thought directions extending to that point might be useful (the bearings and distance being ascertained by chronometer and bearings of the peak of Rigas Hill). From Catappang Pahse to Oojong Booboon, the coast extends S. 43° E. 32 miles nearly in a straight line, having only a slight regular curve to the N. E. The coast is quite low, with a sandy beach, without any points or a single hill *near* the shore, which is closely crowded with arroon trees, similar in appearance to the pine. They commence near Catappang Pahse, and extend to Wylah River, a distance of about 25 miles, level and uniform as a line of soldiers, with scarcely a break. From Wylah River, for the distance of about 2 miles to the S. E., there is an opening, where there are no high trees except 5 or 6 very tall ones, standing close together in the centre of the opening: these are very conspicuous in the offing; there are also a few coco-nut trees, and several houses a short distance to the S. E. of them; but the latter cannot be seen far. From this break the arroon trees again commence, and extend in the same close and uniform order 4 or 5 miles farther, and terminate close to Oojong Booboon. This is the best mark to distinguish this point, as there is not one arroon tree between it and Annalaboo. This coast appears safe to approach within a moderate distance; no shoals are known to exist, though it is said there is one near Wylah River, not far from the shore." Panghah.

POINT BUBON, or BOOBOOANG, in lat. 4° $14\frac{1}{2}'$ N., and about 4 leagues to the N.W. of Analaboo, is conspicuous from a dark cluster of trees upon it resembling a bonnet, and the coast here is safe to approach to 12 fathoms. If bound to the village of Boobooang, bring the woods to the south of it to bear North, then steer in for it till in $3\frac{1}{2}$ fathoms, if in a small vessel. Point Bubon.

Analaboo. ANALABOO, or NALABOO, in lat. 4° 8½′ N., lon. 96° 8′ E.,* distant 13 or 14 leagues S. E. ¾ E. from Cap Island, may be known by a grove of coco-nut trees on the low rocky point that forms the north side of the road, appearing like an island when first seen, the land being low along this part of the coast. A ship may anchor here with the point bearing about N.W. in 7 or 8 fathoms, on the south side of a reef that projects a considerable way from the north side of a small rivulet, and procure wood, plenty of fresh water, or other refreshments. Captain Bennet says, you may anchor in 5 fathoms, with the point of coco-nut trees W. ¼ S., distant about half a mile, and will be sheltered from north-westers. A reef projects a quarter of a mile from the point, which is steep to with only 5 feet water on it, and the sea does not break over it except in blowing weather.† According to Mr. Gillis, there are four shoals in the neighbourhood of the point. The one most in the track of vessels entering the port is called Loongcarp Oojong Cahrang, and bears S.W. ½ S. half a mile from the point; the shoalest part found was 11 feet. Another shoal bears W. ½ N. from the point, about the same distance as the former, has very little water on it, with 6¾ fathoms mud a quarter of a mile outside it. From this in a northerly direction, distant a quarter of a mile, is another small shoal with a roller on it, and another shoal, with Analaboo Point E. by S. ½ S., distant about 2 miles, with not more than 5 or 6 feet. Mr. Gillis was assured, by the fishermen who accompanied him to examine these shoals, that there were no other, though there were several near the shore in the direction of Bubon.

Supplies.

Dangers.

Directions. "A vessel bound to Analaboo from the northward, with a free wind," says Mr. Gillis, "may round the point in 7 fathoms, if the depth is known exactly; otherwise it would not be safe to round it so close. When the point bears N. E. about 2 or 2½ miles there will be 8 fathoms regular soundings. A vessel passing outside that depth with a strong N.W. wind would find it difficult to reach the anchorage without tacking. As soon as the landing place can be seen, or when the point bears N. N. E., a direct course may be steered for the anchorage." A considerable trade is carried on here in pepper, and several American and other ships procure full cargoes in the season. The Rajah is favourably inclined to those who come to trade at this place.

Soundings. The soundings from the land of Achen Head to Cap Island are in some places irregular over a rocky bottom, the depths generally 18 to 30 fathoms from 1 to 3 leagues off shore. In this space, ships should keep 2 or 3 leagues from the land in the night, to give a proper berth to the rocky isles scattered along the coast. From Cap Island to Analaboo, the soundings are more regular, and the bottom soft, where the shore may be approached to 11 or 12 fathoms, and occasionally to 9 fathoms; but not under this depth in passing Analaboo Point, as 1½ miles S.W. from it lies a coral shoal, which after passing you may stand into the bay, and anchor in 5 fathoms with the River's Point N. ¼ E., China House N. by W. ¾ W.

From Analaboo to Cape Felix or Oojong Rajah, the course is S. E. ½ E. to S. E. by S., distant 10 or 11 leagues, and the coast may be approached to 11 or 12 fathoms, from 2 to 7 or 8 miles off shore: near Cape Felix, and about 4 or 5 miles from the shore, the water deepens suddenly to 26 or 28 fathoms, and the coast trends from it eastward to Soosoo.

Shoal. With Cape Felix bearing S. E. by E. ¼ E. about 10 miles, the Countess of Loudon

* Lieutenant Freeman made the Point of Analaboo, in lat. 4° 7′ N., lon. 96° 8′ E., by chronometers, from King Point, Achen Head. Captain Ashmore made the point in lat. 4° 7′ 36″ N., lon. 96° 7′ 22″ E., by mean of many chronometric admeasurements, from 1821 to 1827; and in 96° 9½′ E., by a series of lunar observations.

† Mr. Gillis, in his sailing directions for the Pepper Ports, mentions this reef as being *always* visible.

shoaled quick from 11, 10, and 9, to 3 fathoms, on a shoal of small extent, and immediately after tacking on it had 9 fathoms.

Captain Endicott appears to refer to this shoal in his Directions for the Pepper Ports, when he says, "Abreast Oojong Trepah, which lies about half-way from Analaboo to Cape Felix, and in the track of 9 fathoms, the natives say there is a coral shoal of 3 fathoms, and perhaps less water, at the distance of 3 miles from the shore."

CAPE FELIX, or OOJONG RAJAH, in lat. 3° 43′ N., lon. 96° 40′ E., by Captain Ashmore's observations, and in lat. 3° 44½′ by Captain Endicott, is a low level headland, bold to approach, bearing from Soosoo town West, distant 5 or 5½ leagues, and forms the western extremity of the bay. The cape is difficult to distinguish, but Capt. Endicott mentions a small flat house, built of mats, half a mile to the eastward of the cape, by which, if within 1½ or 2 miles of the shore, it may be known. The house has generally one or more white flags on it. Cape Felix.

He also remarks that "a small coral shoal is said by the natives to lie close inshore just to the northward of the cape. W. by S. ½ S., about 14 miles from Cape Felix, there is also a 4 fathom shoal; the English brig Heldrane sounded on another of 5 fathoms, Cape Felix N. E. and lat. observed 3° 35′ N. South from Cape Felix 12 miles I passed over, in the ship Suffolk, in 1827, a 4 fathom shoal with 55 fathoms no ground just inside of it; a little distance, say three-quarters of a mile to the N. W., is another small shoal, with deep water between.

QUALLA BATOO is about 3 miles to the W. N. W. of Soosoo, and, according to Captain Endicott, is, during the N. W. monsoon, one of the safest and best roadsteads on this coast. Coasting along from Cape Felix, 5 or 6 miles off shore, in 28 or 30 fathoms, a ship may stand on to the eastward in this depth, which will lead outside the shoals, until two clumps of trees like islands, about a mile apart, are seen; these are the points of Soosoo Bay; and when the southernmost clump (on Soosoo Point) bears N. E. ½ E. she may steer towards it until the houses at Qualla Batoo bear North, then steer direct for them, which will carry you mid-channel between the shoals, three of them on the left hand, the southernmost of which bears S. W. by W. from Pulo Khio, and one on the right hand, about a mile distant from Pulo Khio: the sea generally breaks on them. The anchorage at Qualla Batoo is in 20 to 22 fathoms, with Pulo Khio E. S. E., the river's mouth N. ½ W., and Cape Felix about W. ¼ S. About 4 or 5 miles to the westward of Qualla Batoo there is a shoal, which lies in a direct line between Cape Felix and Soosoo Point. Qualla Batoo. Shoal.

Small ships frequent this place, to procure pepper and other articles of trade; but it is prudent to be always guarded against the perfidy of the natives, who have been several times successful in assaulting and taking possession of ships which came to trade with them. Natives.

SOOSOO BAY contains several dangerous shoals, covered with 1, 2, and 2½ fathoms water; there is also much foul ground in it, with overfalls from 20 to 10 fathoms; but the channel is wide and safe between the shoals on the west side of the bay, and those to the southward of Soosoo Point. A ship bound into the road, after coasting along about 2 or 3 leagues off, in 28 to 35 fathoms, when the road is approached, ought to keep a boat a-head to sound, if unacquainted, and steer in with Soosoo Point, or the entrance of the river, bearing about N. E., or the town N. E. ½ E. Pulo Khio, the N.W. point of the bay, lies 1½ or 2 miles to the westward of Soosoo Soosoo Bay. To sail into the road.

Point, and resembles it when first seen; it has the appearance of an island. A ship may anchor in 18 or 20 fathoms, with the houses of Soosoo N. E. by E., about 2 miles off shore; or by choosing a clear berth with the boat, she may move into 9 or 10 fathoms near the entrance of the river, and anchor with Soosoo Point E.N.E. Soosoo Point appears with two or three trees close to the houses, like a small island; steering in with it about N. E. ½ E., a tall tree near the middle of the bottom of the bay will be seen, which bring N. E. ½ N., and steer direct for it until in 10 or 11 fathoms soft ground, and then anchor within a quarter of a mile of Soosoo Point. The Royal George, at anchor in 18 fathoms, had Cape Felix W. ½ N., the southernmost extreme of the land S. E. by S., and Soosoo Town E. N. E., distant about a mile: Soosoo Town is in lat. 3° 41′ N., lon. 96° 52′ E.

Anchorage.

Position of Soosoo.

About 2½ leagues to the S. E. of Soosoo, on the S. E. side of a bluff point (North Tellapoe Point) of arroon trees, there is a place called Mangien, with anchorage in 9½ fathoms, inside of a rocky shoal that lies about 1½ miles about S. by W. from the point. Off North Tellapoe Point is another shoal, which almost always breaks, but there is a passage of 10 fathoms inside of it. Laboan Hadgee, about half-way between Mangien and Muckay, is also an anchoring place for procuring pepper, having a sand-bank and other dangers fronting it.

Anchorage of Mangien and Laboan Hadgee.

Muckay.

MUCKAY, in lat. 3° 28′ N., is a small place, where the coasting vessels stop at times to trade: if bound into this place, bring the low point that forms the western arm of the bay of Muckay to bear N. E., and steer on this bearing till within half a mile of it, which will clear the shoals; but the anchorage is not good within the N.W. point.

There are two shoals off Muckay in 23 fathoms, one bearing W.S.W. about 2½ miles from the southern bluff point of Muckay Bay, the other S.W. 3 miles from the same point, and they bear nearly North and South of each other; the former has only 11 feet on it, and the latter 2½ fathoms. A course S.W. from Muckay will lead between the shoals, and when in 27 fathoms you are outside of them.*

The course from Cape Felix to Muckay is S. E. by E. ½ E., in which track a ship should not come under 27 fathoms water, as there are several dangerous shoals within this depth; also many shoals beyond this depth, some of which are also dangerous.

Between Muckay and South Tellapoe, about mid-way, there is a small island, called Pulo Soorvodung, close to the shore, between which and Tellapoe lies a 3 fathom shoal. It is about a mile off shore, and bears South 1½ miles from the island.

Tellapoe.

SOUTH TELLAPOE, or TELOK POW, in lat. 3° 22′ N., and 8 miles S. Eastward from Muckay, is a place where pepper may sometimes be obtained: the best anchorage is with the point N. by E. in 17 fathoms, under which depth the ground is frequently foul. Labanacky is a small place, in lat. 3° 20′ N.

There is a remarkable white rock about 2 miles to the South-eastward of Tellapoe; it is called by the natives Battoo Ply-eah. Between this and Tumpat Tuan are the small pepper ports of Samah Duah, Eah Moodoong, and Telloo Cattapung. Along this coast the soundings are very deep.

Tumpat Tuan.

TUMPAT TUAN POINT, the southern extreme of the high land seen from Soosoo, distant from it about 12 leagues, is in lat. 3° 15′ N., lon. 97° 20′ E. (or, according to Captain Endicott, in lat. 3° 16½′ N.), having a reef projecting a mile from

* Captain Joseph Pearce, of the ship Frankland, was informed by the native fishermen, that there is a shoal with only 11 feet on it, S. S. W. from Muckay Point, 6 or 7 miles distant. (*Naut. Mag. for* 1841, p. 732.)

the point to seaward,* with anchorage in 15 to 22 fathoms close on the east side of the point, with it bearing about West, and the village N. by W., distant one mile.

About a mile W. by N. from Tumpat Tuan Point lies a small round rock, like a boat, with a rock visible off the extreme point, which may be rounded close, having 27 fathoms at a small distance. In the bottom of the bay there is a reef, on which the sea usually breaks, rendering it unsafe with southerly winds.

Captain Endicott's description of Tumpat Tuan is as follows: "There are two rocks above water off this point, one called Batto Copeah, or Cap Rock, bearing S.W. about a cable's length from the point; the other, called Battoo Toonkal, or Stick Rock, bearing W. ¼ N., three-quarters of a mile from it, having 30 fathoms close to its outer edge; there is also a coral shoal of 3 fathoms, and perhaps less water, bearing from the point W. by S. about 1½ miles. . . . . There are two coral shoals in the small bay; one bearing about N. E. by E., three-eighths of a mile from the point; the other near the eastern part of the bay, bearing from the point E. ¼ S. three-quarters of a mile. Here you are sheltered from N. W. winds, with the point bearing W. ½ S. to W. by S., and the village N. W. ¾ W. to N. N. W. ½ W."

Along this part of the coast, between Achen Head and Soosoo, the weather is generally settled and fine in the northerly monsoon, with frequent land and sea breezes.

POINT LABON, or OOJONG CALOAT, in about lat. 3° 3′ N., is 19 or 20 leagues to the S. E. of Cape Felix, and in sailing between them, great care is requisite to avoid several shoals interspersed along the coast. The Lord Castlereagh struck on one of them in lat. 3° 4′ N., distant about 10 miles from the shore, and had no ground 40 fathoms close to it. This seems to be the shoal called Lagootsong by the natives, bearing S. W. from Tumpat Tuan Point, with only 10 feet water on its shoalest part, as stated by Captain Bennet, who struck on it in one of his voyages from Bengal to this coast. Betwixt lat. 3° and 3° 50′ N., he was very close to several other shoals, before they were observed. In lat. 3° 30′ N., the Royal George passed over the tail of a shoal† in 6 fathoms, when the rocks were seen alongside; a little outside of it, they had no ground 85 fathoms, and 45 fathoms close to it on the inside; the depth from thence decreased gradually to 26 fathoms, steering N. by W. toward Soosoo Bay. In lat. 3° 14′ N. there is another shoal, with 4 fathoms, or less water on it, and 20 fathoms at a small distance inside: when at anchor on it in 5 fathoms, the extremes of the coast bore from N. N. W. to S. E. by E., and the White Rock N. N. E. ¾ E., distant off shore about 3 leagues.

Point Labon.

Dangerous Shoals.

These shoals are thus described by Captain Endicott: "A dangerous shoal lies in lat. 3° 4′ N., with Tumpat Tuan Great Hill bearing North. Another shoal lies in the neighbourhood of Tumpat Tuan, on which the English brig Sophia, drawing only 11 feet, struck in 1831. Its position is not well ascertained, but the Sophia, after getting off, steered N. ½ E., and soon saw the vessels at South Tellapoe right a-head." It is supposed to lie about S. W. from Tumpat Tuan Point. Another shoal, also dangerous, lies in lat. 2° 58′ N., with Tumpat Tuan Great Hill N. by E. The brig Governor Endicott passed close along its eastern side in 1829, and saw it break several times. "There is also a shoal of 3 fathoms, with Tumpat Tuan Great Hill N. by E. ½ E. and Pulo Munkie E. N. E.; it has 34 fathoms close to it. Between Tumpat Tuan and Pulo

* There is no reef projecting to seaward shewn in Mr. Gillis' plan of Tumpat Tuan Bay, but depths from 3 to 17 fathoms close to the point.

† This appears to be the same bank on which the Albion had 5 fathoms in lat. 3° 30′ N., and 4 or 5 leagues off shore; she hauled to the S.W., and soon deepened to 50 fathoms no ground.

Munkie the coast at 3 or 4 miles' distance is considered free from danger, with regular soundings." . . . . " Along this shore there is commonly a tremendous surf and dangerous landing, except in the native boats: the coast has generally proved unhealthy, and frequently fatal to ships' crews who have been obliged to remain over night."

From Tumpat Tuan to Oojong Camarang (the point to the N. Westward of Bancoongong Bay), the course is about S. E. 8 leagues, and a ship should keep $2\frac{1}{2}$ or 3 miles off shore in 25 to 20 fathoms: when you raise the point, the small isle, called Pulo Monkier, or Munkie, will be perceived, from which Pulo Dooa bears E. by S. about 5 miles.

Bancoongong Bay.

BANCOONGONG, or BACOONGON, BAY, about 6 leagues to the S. Eastward of Point Labon, where ships may lie sheltered from the north-westers, has some rocks off its western extremity; and there is a shoal on the edge of soundings, about 3 or 4 leagues to the southward. The river and village of Bancoongong, in lat. 2° 52′ N., lon. 97° 38′ E.,* may be known by two small islands, the northernmost called Pulo Dooa, the other Pulo Kayoo, which have a safe channel between them of 10 and 12 fathoms, and are situated near the river's mouth;† there is also a mountain close to the sea nearly as high as the others, which is formed like a saddle, with the highest end to the southward, and Bancoongong lies close under its northern end, and 3 or $3\frac{1}{2}$ miles to the N.W. of the village of Sebadies. A large ship may anchor in 15 fathoms soft ground, about half a mile off shore, with the entrance of the river bearing N.N. E., where she will be sheltered from N.W. winds: vessels sometimes touch at this place to trade, there being a river and village on the east side the point.

Position.

Anchorage.

Captain Endicott gives the following directions for Bancoongong: " In approaching this place from the southward much care is requisite, as there are several shoals on which a ship would ground. To avoid these, bring Bancoongong Bazar to bear N. by W., and run in on this bearing till Pulo Munkie bears West; you may then haul out more to the westward and anchor in from 14 to 15 fathoms, three-quarters of a mile off shore, with the Bazar bearing North and Pulo Munkie W. $\frac{3}{4}$ S. If bound from the northward, the passage between Pulo Munkie and the main may be adopted, by keeping about half a mile from the latter and standing along shore at that distance till Bancoongong village bears from North to N. by E., and anchor. Should the passage to the southward of Pulo Munkie be preferred, bring the opening between the Pulo Duas to bear East, and run for it till Bancoongong Bazar bears N. by W.; and observe the same directions as given above for approaching these roads from the southward."

Campong Arra Islet and Sebadies village.

There is a shoal a mile S. S. E. from Pulo Kayoo, and S. S.W., a mile from it, Campong Arra, a small islet with reefs; but off the village Sebadies, which lies East 2 miles from Pulo Dooa, there is good anchorage in 12 fathoms about 1 mile from the shore, sheltered from N.W. winds. If bound into this road, and being about 3 miles off shore in 25 fathoms, bring the village Sebadies to bear N. by E., steer in with this bearing, and anchor in 10 or 12 fathoms, the village N. by E., 1 or $1\frac{1}{2}$ miles.

Lieutenant Henning says, there is a passage between Pulo Kayoo and the small Isle Campong Arra, but nearly in mid-channel lies a shoal, with $4\frac{1}{2}$ feet on it, and another shoal E. $\frac{1}{4}$ S., from Campong Arra three-quarters of a mile, which always breaks.

* Bancoongong, according to Endicott's Chart, is in lat. 2° 56′ N., lon. 97° 42′ E., and lies S. E. by E. 4 leagues from Oojong Caloat.

† Captain Endicott comprehends both these islands under the name Pulo Duas; they lie S. E. by S. 3 miles from Bancoongong, and about half a mile from the nearest land by his chart.

About half a mile W. by N. from Pulo Dooa, there is also a shoal. Under Pulo Dooa is the best harbour amongst the northern pepper ports, being well sheltered in 13 fathoms, with that island bearing West about half a mile.

TOUROUMANG, or TAROOMON, is 6 or 6½ miles to the south-eastward of Sebadies, where a vessel may anchor; but W. N.W., 2½ miles from it, there is a reef on which the sea sometimes breaks, having close to it 8 fathoms water. Touroumang.

In the vicinity of Touroumang Bay there are several dangerous shoals, one of which is in lat. 2° 47′ N., bearing from Pulo Dooa S.W. ½ W. about 8 miles, and W. by S. from the highest peak of a Saddle Hill, situated to the northward of Touroumang: this shoal has only 11 feet water on it, with 30 fathoms close on the outside. The brig Hammudy struck upon it in the night, steering S. S.W. in 28 fathoms. There is said to be a shoal in 24 fathoms, bearing from Pulo Dooa S. W. ½ W., distant 3 miles; one bearing N. by W. ½ W. from Pulo Touroumang, distant about 2 miles; and another about W. by S. 2 miles from the same place.

Touroumang now affords the largest quantity of pepper of any place on the coast; in approaching which, care should be taken to avoid the shoal bearing N. by W. ½ W. from it, on which the sea sometimes breaks, as it is only covered with 9 feet water. The isle near the shore to the southward of the anchorage (Pulo Touroumang) should be brought to bear E. S. E., then steer towards it, and pass at a moderate distance round its northern end, from which a spit projects about half a cable's length. The anchorage is usually in 7 fathoms sandy bottom, off the mouth of the river, but good ground tackling is requisite, it being exposed to north-westers. Some vessels anchor under the island, although it is inconvenient to be so far from the mouth of the river. There is a passage to the southward of the island, between it and the shore, which is seldom used, as a reef lies nearly south about 1½ or 2 miles from the island; but Captain Ross says this inside passage is safe, by rounding the point to the southward of Touroumang in 5 fathoms, and from thence the track close along shore, inside of all the shoals, to Sinkell is safe, and preferable to the outside track by Passage Island.

Booloosemah Village, in lat. 2° 32½′ N., has opened a trade, where ships procure pepper, and the anchorage is in 6 or 5½ fathoms; Captain Ashmore, in 1827, when at anchor in the latter depth, off shore about a mile, had Oojong Petecallo bearing S. by E., Tumpat Tuan Hill, N.W. by N., and Baniak Peak, S.W. ¼ W. Booloosemah.

FROM BANCOONGONG TO PADANG.

IN sailing from the northward, ships bound to Sinkel, or other ports north of the equator, ought to proceed by the inner passage between Pulo Baniak and the main, and near to Passage Island. The land between Bancoongong Bay and Cape Sitoe is mostly low near the sea, and hilly inland. Directions.

In coasting along, keep about 3 or 4 leagues from the shore to avoid the shoals, and when Passage Island is seen, steer towards it. Within 2 or 2½ miles of the main, with

Rocky Shoal. Baniak Peak bearing W. S.W. about 7 leagues, there is a rocky shoal, having only from 2 to 3 fathoms on it in some parts, with a safe channel of 8 and 9 fathoms between it and the Sumatra shore.

Passage within it. Of this channel close along the coast, inside the rocky shoal, the Cadogan's journal gives the following description. December 5th, 1729, passed in 8, 9, and 10 fathoms regular soundings within a mile of the shore, between Cape Sitoe and the rocky shoal which lies off it, and at times could see a small breaker on the sunken rocks, which appeared to be 2 miles distant from the Cape, and makes this passage probably safer than the other between the shoal and Passage Island, because you may venture within half a mile of the shore.

Captain Ross says, this Inner Passage is very safe, he having adopted it from the notice here given in the Cadogan's journal, and had 12 fathoms water near to Oojong Petecallo, and from thence passed close along the coast to Taroomon Road.

Passage Island and channel. PASSAGE ISLAND, called Javoe Javee by the natives, in lat. 2° 23′ N.,* and about 2 leagues to the westward of Cape Sitoe, or Oojong Petecallo, is low and sandy, with few shrubs; but one large tree of the Banian species may be seen at a great distance, and the island may be discerned from the deck 4 or 5 leagues in clear weather.

The channel between the coast of Sumatra and Passage Island is rendered intricate by the dangerous rocky shoals mentioned above, having only 2 and 3 fathoms on them in some places, and situated nearly mid-way betwixt the island and the main. Although there is a safe passage inside these shoals mentioned above, by keeping close to the Sumatra shore, yet the channel between Passage Island and the shoals has been usually adopted.

To sail through the channel from the northward. In steering for this channel, keep about 3 leagues off the coast until Passage Island is seen, then steer towards it, observing never to bring it more easterly than S. E., to prevent getting near the shoals and irregular soundings, projecting from its outside to a considerable distance, one of which shoals is said to be 3 or 4 miles W. N.W. from the island. Having approached Passage Island within three miles, bring it to bear S. E. by S., or S. S. E., which are good bearings, and when three-quarters or half a mile off it with these bearings, keep about the same distance in sailing along its eastern side, but not more than three-quarters of a mile from it, to avoid the shoals mid-way between it and Cape Sitoe: on account of these, the island must be borrowed upon, but not under half a mile, for the flat is dry all round to the distance of a cable's length at low water, and projects about a quarter of a mile, or rather more in some places, but is not visible at high water. By preserving the distance mentioned, the soundings will be tolerably regular, and the depths never less than 10 or 12 fathoms, mostly rocky bottom. When Passage Island is in one with the peak of Baniak they bear S.W. by W. ¼ W., and it cannot be mistaken, there being no other island betwixt it and the main. A good look-out from the mast-head is requisite when passing through this channel, as the coral shoals may be discerned in clear weather, but the flat surrounding Passage Island cannot be always distinguished. When through the channel, which is about a mile in length, the island must be kept between N. N.W. and N.W. by N., in steering from it to the southward, where a ship may anchor if the wind

* Captain Ashmore made it in lat. 2° 24½′ N., in 1816, and in lat. 2° 22½′ N. in 1824; and he usually experienced on this coast a difference of 2 or 2½ miles in the observations for latitude, when the sun's declination was north, from those taken when the declination was south.

or tide be unfavourable; but to the northward of the island do not anchor under 20 fathoms, for the ground there is rocky under that depth.

From Sinkel Road to Passage Island the course is N.W., and in coming from the southward, when Passage Island bears S.W., steer N.W. in 12, 13, and 14 fathoms, and pass on the east side the island at the distance of three-quarters of a mile: if you borrow under half a mile the water shoals suddenly from 11 or 12 to 6 fathoms, on the edge of the reef that surrounds the island. To sail through the channel from the southward.

There is a channel to the westward of Passage Island, by keeping near to Pulo Sago and the other islands that line the eastern side of Baniak, as several dangerous shoals extend two-thirds of the channel over from Passage Island towards Pulo Sago. Those who intend to adopt this channel in coming from the northward, should never, in working, bring the southernmost island to the southward of S. ½ E. in standing towards the shoals; or even then, if the water shoal suddenly, tack immediately, as the shoals are steep to. The depths in this channel are irregular, from 17 or 18 to 33 fathoms, and it is about 2 miles wide in the narrowest part abreast the eastern side of Pulo Sago, between some shoals that project about half a mile from the N. E. point of this island, and the other shoals which occupy the eastern side of the channel towards Passage Island. Channel West of Passage Island.

In proceeding through this channel, a good look-out from the mast-head is proper to discover the shoals, not having been well explored, and formerly no passage was known to exist here; but several of the ships which trade to this coast have passed through it with safety, and Captain Ashmore has given a plan of it in his chart of the Northern Pepper Ports, West Coast of Sumatra, published at the Hydrographical Office, East India House.

SINKEL RIVER, in lat. 2° 13′ N.,* about 4 leagues to the S. Eastward of Passage Island, subject to the King of Achen, was formerly a place of considerable trade, the principal exports being benzoin, camphor, wax, and gold. A ship bound to this place should, after leaving Passage Island, steer about S. S. E. or S. E. by S., taking care not to bring the island to the westward of N.W. by N., by keeping 6 or 7 miles from the main; the shoals between them will then be avoided, and having brought the low point on the north side of Sinkel River, which is covered with palmyra trees, to bear about E. by N., she may haul in, and anchor in from 12 to 17 fathoms, with the mouth of the river N. E., distant one mile. Sinkel Road is inside the reef that lies to the S. E. of the river. Sinkel River and Road.

Breakers project a little way from the points that form its entrance, and the town is some distance up the river; but when a ship is known to have anchored to trade, the merchants will come off to her. No person should be permitted on board, except the principal merchants, deprived of offensive weapons, and caution is requisite to repel or prevent any attack that the natives may be inclined to make. A snow, belonging to Bengal, was cut off here in 1782, since which time, few European traders have touched at this place; but it is said to be in a reviving state. Caution.

SE LEAGA BAY, about 3 leagues eastward from the mouth of Sinkel River, is sometimes chosen by ships trading to Sinkel, on account of its shelter. If bound into it, steer from Sinkel Point along the coast at a moderate distance to the west point of Se Leaga Bay.

* Captain Ashmore made Sinkel Point in lat. 2° 15′ N., by mean of observations of sun on both sides the zenith.

the bay, taking care to avoid a shoal or rock, said to lie in 20 fathoms, S.W. from the island in Se Leaga Bay. Oojong Rajah, the west point of the bay, has a long flat projecting from it about 2 leagues, which may be crossed about 3 miles from the shore in 8 or 9 fathoms, hard ground, and when the bottom becomes soft to the eastward of it, haul up N. N. E., and pass on the west side of a low sandy island, and anchor between it and the western shore. If the ship is to remain a considerable time, she should run into 5 fathoms mud, and anchor on the west side the small island of Se Leaga, which is covered with trees, where she will be sheltered by the land from westerly winds and from S. E. winds, by the reefs of breakers in that direction, at the entrance of the bay.

Islands and Shoals. Several islands and shoals are scattered along the coast from hence to Baroos, and there are some places on it, such as Bankole and Tapoos, frequented by the small trading vessels. The land in this space is generally low near the sea.

Pulo Lacotta. PULO LACOTTA, in lat. 1° 50′ N.,* lon. 98° 7′ E., by Captain Cameron, of the London, distant 9 or 10 leagues from Sinkel River, is a small low island, covered with trees, having at 4 miles' distance, N. by W. from it, a low islet or sand-bank, in about Bird Island. 36 fathoms water, called Bird Island, from being a place of refuge to the feathered race; it is not discerned farther than 3 leagues. A reef projects from it about 1 mile to the N. W. and S. E., and when it is visible to an eye at 15 feet elevation above the sea, bearing S. E., 7 miles distant, and Pulo Lacotta S. S. E. ¼ E., there is a shoal with only 1 fathom water on it. With Bird Island W. S. W. 5 miles, Lacotta S.W. ½ W., and Mensular bearing E. S. E. to S. E. by E. ½ E., there is a shoal with 11 feet on it, and from 30 to 25 fathoms around, at a small distance.

To sail from Sinkel to Baroos Road. A ship departing from Sinkel should steer out into 23 or 26 fathoms, then S. Eastward for Bird Island, which may be approached on the north side within 1 or 1½ miles. The water deepens near these islands, but the soundings are not always regular, and 34 fathoms is too close to Bird Island; the best track to keep is from 26 to 30 fathoms water. Great prudence is requisite to pass them in the night; this should only be done in clear, favourable weather, taking care not to borrow nearer the shoals fronting the coast than 27 fathoms, nor too close to Bird Island, on account of the shoal to the North-westward, and another betwixt it and Pulo Lacotta. Having passed Bird Island, haul in E. by S. and East for the mainland, and pass Pulo Carangua, a small island covered with trees, at 2 miles' distance on the south side, or less if requisite, and anchor in Baroos Road in 10 fathoms, mud, with the flagstaff N. N. E. nearly 2 leagues, and Pulo Carangua W. N. W. about 2 or 3 miles.

Baroos. BAROOS, in about lat. 1° 56′ N., is a place of some trade, the principal exports camphor and benzoin; fresh water may be procured, but it is dangerous for a ship's boat to enter the river, except having one of the natives as a guide. Wood and water Pulo Lassey. may also be got at Pulo Lassey, about 2 leagues to the N.W., near the west point of Tapoos Bay, by anchoring under that island, with it bearing N. W. by W., distant about a mile.

To sail from Baroos to Tappanooly Bay. The course from Pulo Carangua to Pulo Sokum is S. E. by E. about 5 or 6 leagues; in sailing towards Tappanooly Bay, the channel between Mensular and the main is

* Captain Ashmore made it in lat. 1° 51′ N. by mean of observations of the sun on different sides the zenith; and by noon observation, 9th October, 1814, Captain Henderson, of the Resource, made it in lat. 1° 50′ N. He passed within 2½ miles of Bird Island, and got no ground with 30 fathoms line.

about 3 leagues wide, with regular soundings, and good anchorage. There is a shoal of coral rocks,* with 9 feet water on it, 2 or 3 miles off the main, and in the track between Pulo Sokum and Battoo Barroo Point, which is of considerable height, and forms the western extreme of Tappanooly Bay. This shoal is small, said to bear W. N. W. from Battoo Barroo Point, and lies in 9 or 10 fathoms, so that a ship should not come under 12 or 13 fathoms until near the point, which is distant about 3½ or 4 leagues to the S. Eastward of Pulo Sokum; she may then round the point in 9 or 10 fathoms, keeping it pretty close aboard, and the Island of Ponchang Cacheel, which is the nearest island to the point, will be seen to the N. N. Eastward. This island may be passed on either side as most convenient, and after bringing it to bear about S. W., or the hill on which the colours are hoisted S. by W. ½ W., she may anchor in 7 or 7½ fathoms, soft ground, about a cable's length from the island, and carry a hawser on shore to steady her, where she will be land-locked.

Mr. Prince's Directions.

The following directions for ships bound to Tappanooly from Bencoolen, by Mr. Prince, the resident at the former place, are said to merit confidence. "Make the land at the south end of Pulo Nias, which pass at a few miles' distance; steer for Natal, and after discerning the Hill, which is rather low and sloping, being in 25 or 26 fathoms, steer N. N.W. and N. by W. for the Sugar Loaf. Between Natal and the Tabooyong Islands, 21 to 24 miles distant, there are dangers in-shore, therefore do not approach it nearer than 20 fathoms; but from Tabooyong and the Sugar Loaf, the land may be approached at discretion, as the passage is quite clear."

Tappanooly Bay.

TAPPANOOLY BAY forms an extensive harbour, or is rather subdivided into many coves or harbours by the different islands in it, where ships may lie sheltered from all winds. Ponchang Cacheel, a little inside the entrance, where ships generally moor, is in lat. 1° 44′ N.,† lon. 98° 41½′ E. Between it and Pulo Panjang, the next island to the northward, there are 7 and 8 fathoms in a passage about half a mile wide. On the east side of Panjang, the harbour is spacious, the depths from 7 to 4 fathoms, with a watering place on the main to the northward; there is also good shelter to the westward of the same island, but reefs project from the north end of it and the adjoining shores, and also from the other islands beyond it, in the northern arm of the bay; notwithstanding, there are safe passages and good shelter among them, in depths from 3 to 5 fathoms. Variation 1° 19′ E. in 1822. Variation.

The village of Tappanooly is at the northern part of the bay, about 4 miles from Ponchang Cacheel; from thence, this extensive bay is continued to the westward, by a narrow channel that opens into a large lagoon, with depths in it from 2 to 3 fathoms.

Ponchang Gadang.

Ponchang Gadang, on the east side the entrance of the bay, is the largest island in it, and has some steep hills covered with large timber; near the foot of these there are several springs of fresh water. The passage betwixt this island and Ponchang Cacheel is a mile wide, with 6 or 7 fathoms close to either island, and 10 fathoms in mid-channel; between these two islands and Pulo Seeroodoot, situated about 1½ miles to the N. Eastward, the depths are from 7 to 9 fathoms, regular soundings, and the channels safe. There is good anchorage near the N. E. side of Ponchang Gadang, in

* There is said to be a coral shoal, about mid-channel between Mensular and the main, with only 3 or 3½ fathoms on it, the situation of which is not correctly known. Pulo Sokum is the first small island on the coast to the northward of Tappanooly Bay.

† The astronomers from Madras, who visited this place in 1822, made Tappanooly Island in lat. 1°43′46″ N., by stars North and South of the zenith, and in lon. 98° 41′ 17″ E. by chronometers from Madras.

7 or 8 fathoms, to the eastward of a small island off its north end, around which, and the west, south, and east sides of Gadang, a reef projects some distance. An excellent cove stretches into the land to the eastward of Pulo Seeroodoot, having 4 and 5 fathoms water inside, and the same depths in the entrance, between the south end of that island and the mainland.

Mensular Island and harbour.

MENSULAR, or MASSULAR, in lat. 1° 32′ N., is about 4 leagues in extent East and West, situated to the westward of Tappanooly Bay: it is a high island, with several inlets on the north side, and contiguous to its S. E. end there is a group of islets, which form a harbour, with various depths in it from 22 to 14 fathoms, over a bottom of soft white mud; between the entrance and the group of islands near it to the southward, the depths are from 24 to 30 fathoms, in two safe channels leading from the eastward and S. Westward. This harbour furnishes excellent fresh water, and the surrounding land of Mensular and adjoining islands abound with poon spars, fit for masts or yards of any size that may be required. It is high water at 6 hours on full and change of moon, the rise of the tide only about 4 feet. At the N.W. end of the island there is a considerable waterfall, which issues from a high hill. If a ship coming from the northward is not bound to Tappanooly, she may, after passing Bird Island, steer for the N.W. end of Mensular, and proceed along the west side of it, which is a bold shore; but she ought not to stand far out, on account of Pulo Doa and the adjacent shoals. These are a larger and smaller isle, with some dangers near them, distant 3 and 4 leagues to the S.W. of Mensular; other dangers lie to the northward, between them and Pulo Lacotta, which are avoided by keeping well to the eastward after passing Bird Island.

Tides.

Dangers.

The Claudine, April 12th, 1817, struck on a reef extending about 1½ miles E. by S. and W. by N., the Sugar Loaf bearing N. E. by E. about 5½ or 6 leagues, the westernmost point of Mensular N. by E. ½ E., and Pulo Doa N.W. by N.; about a cable's length from it she had 38 fathoms, and only 11 feet where she struck, which was within half a cable's length of a patch level with the water's edge, that appeared to be the eastern extremity of the reef. In a S.W. direction, at the same time, a very extensive reef of breakers was seen, with a rock above water 4 or 5 miles distant.

Nassy See Tounkas, or Sugar Loaf.

NASSY SEE TOUNKAS, or SUGAR LOAF, in lat. 1° 35′ N., a small conical island, bearing S.S.W. 9 miles from Ponchang Cacheel in Tappanooly Harbour, is the leading mark for ships bound out of that harbour to the southward, it being conspicuous, and is the southernmost of the islands in the south part of the great bay of Tappanooly, situated nearly mid-way between Batoo Mama, the southern extremity of the bay, and the east end of Mensular. To the eastward of the Sugar Loaf, betwixt it and Batoo Mama Point and Pulo Baccar, the nearest island to the N. Eastward, there is an open passage, with soundings from 14 to 19 fathoms; but as a rock lies betwixt the point and Baccar, on the east side of this passage, and from the N.W. side of the latter, likewise from the N.E. side of the Sugar Loaf, reefs project about a cable's length, the passage to the westward is generally preferred.

To sail from Tappanooly by the southern channel.

Departing from Tappanooly Harbour, a ship should steer about S.S.W. for the Sugar Loaf, which may be passed on either side; but the western channel, betwixt it and the entrance of Mensular Harbour, is the best, being nearly 5 miles wide, with regular soundings 22 and 23 fathoms from side to side; the Sugar Loaf being steep at the west end, with 21 and 22 fathoms close to it. When abreast of it, a southerly course should be steered until in 25 fathoms, observing not to bring it to the westward

of North till this depth is obtained, to avoid a shoal of coral rocks, *said* to lie to the S. Eastward of it about 3 or 4 miles.

PULO ILLY, an island near the main, about a mile in length, moderately high and even, bears from the Sugar Loaf about S. by E. ¾ E., distant 6 leagues; from 26 to 22 fathoms are good depths to preserve in coasting between them, and Pulo Illy may be passed in 18 or 20 fathoms, or farther off in 24 or 25 fathoms, distant from it 4 or 5 miles. There is anchorage under this island, and it affords wood and good water. Pulo Illy.

THE ZELODY* ISLANDS, the northernmost, are about 5 or 6 leagues to the southward of Pulo Illy; in passing along here, 24 and 25 fathoms are good depths to preserve, and as the outermost Zelody Island is a considerable way from the main, with 20 or 21 fathoms near it, a ship ought to give it a berth of 3 or 4 miles, to avoid the shoals in its vicinity. There is anchorage and shelter from N. Westers under these three islands, with good water and coco-nuts upon them; but the coast between them and Cara-cara Point is generally avoided, as several shoals lie at a considerable distance from it, with Pulo Tellore and Pulo Capechong, two small islands, lying in the bight inside of them. One of the outermost and most dangerous of these shoals, on which the Syren struck, bears S. ½ E., distant 3½ leagues from the outer Zelody Island, having only 7 feet water on it, and is not always visible in fine weather. There is a passage inside of it, with anchorage, by keeping in 14 and 15 fathoms, but that on the outside is preferable. To avoid it, a ship, after passing the Zelody Islands at 4 or 5 miles' distance, should steer to the southward, observing to keep the outer island to the eastward of North, and not to come under 23 or 24 fathoms soft ground, until Cara-cara Point bears about E. S. E., which will carry her 2 or 3 miles outside of it, as the shoal lies in 20½ fathoms water. Zelody Islands. Directions.

Natal Hill, situated on the north side the river, appears like a gunner's quoin when it bears S. E. by E., and may be known by its barren aspect, and having low land on each side; when seen, it ought to be kept open with Cara-cara Point, to avoid the shoal, and if not bound into Natal, keep out in 21 or 22 fathoms in passing the shoals that front the bay. There is a coral bank about 7 leagues off Mensular, on which the Success Gally grounded, and had 35 fathoms close to. When on the edge of the shoal in 24 fathoms, observed lat. 1° 3½′ N., the Sugar Loaf bearing N. by E. ½ E., Pulo Illy supposed E. ¼ S., Pulo Nyas from W. ¼ N. to W. ½ S., distant 6 or 7 leagues. Coral Bank.

NATAL BAY has in it many dangerous shoals, the outermost of them extending nearly 2 leagues off shore into 17 or 18 fathoms water, which renders great care necessary, in sailing to, or from the anchorage, for many ships have struck on these shoals. Natal Bay.

The Royal Bishop Shoal, on which the ship of that name struck, is small, with only 14 feet on the shoalest part, and lies in 17 fathoms. Cara-cara Point bears from it N. E. ¼ N., Natal Flagstaff E. ¼ S., and Pulo Tamong S. S. E. ½ E. From another shoal, having on it 13 or 14 feet coral, Cara-cara Point bears N. ¾ E., Natal Flagstaff E. by N. ¼ N., and Pulo Tamong S. by E. ½ E. The Shaftsbury Reef, on which the ship of that name was lost, lies farther in, on the east side the channel, and Natal Flag- Royal Bishop Shoal. Shaftsbury Reef.

* Properly Keladee or Cloddy, the name of a species of wild yam, with which they are said to abound.

Cara-cara and other Shoals. staff bears from the west end of it E. by N. $\frac{1}{4}$ N. Cara-cara Shoal, on the west side the channel, bears from Shaftsbury Reef N. by W. nearly 3 miles, being situated about $1\frac{1}{2}$ miles S. E. $\frac{1}{2}$ S. from Pulo Cara-cara, the small island near the shore to the eastward of Cara-cara Point. There are other shoals, the positions of which are not correctly known ; ships, therefore, should keep a boat a-head sounding, when bound into the bay.

To sail into Natal Bay. Ships coming from the northward, bound to Natal Road, after Cara-cara Point bears about E. S. E., in 19 or 20 fathoms, may steer to round it at 3 or 4 miles' distance, by keeping Natal Flagstaff about E. by S., which will carry them nearly in mid-channel between the Shaftsbury and Cara-cara Shoals. When Pulo Cara-cara bears N. E. by N. they will be clear of the shoal that projects from it, betwixt which and the island there is a small channel ; they may then continue to steer direct towards Natal Hill until near the road, then edge a little to the southward, and anchor with the Flagstaff East or E. by N. Ships coming from the southward may pass either inside or outside the Royal Bishop Shoal ; if they keep in 14 or 15 fathoms soft ground, they will pass inside of it, or by keeping in 19 fathoms it will be passed on the outside; after bringing Natal Hill or Flagstaff about E. by S., but never to the southward of E. by S. $\frac{1}{2}$ S. when in 14 fathoms, they may steer in for the road as directed

Anchorage. above. The common anchorage is from 5 to 6 fathoms, with the Flagstaff East to E. by N. $\frac{1}{4}$ N., and nearly in a direct line between Cara-cara Point and Racatt Point, which bear about N. N.W. and S. S. E. from each other, the latter forming the east side of the anchorage; and in this station, the distance from Racatt Point will be $1\frac{1}{2}$ or 2 miles, and from Natal $2\frac{1}{2}$ or 3 miles.

Captain Thornhill, of the David Scott, who was at Natal in May, 1825, is of opinion, that so long as the centre of Natal Hill bears between E. by S. and E. by S. $\frac{1}{2}$ S. by compass, a ship will pass into the road with safety. A ship should not approach nearer than $2\frac{1}{2}$ or 3 miles to Cara-cara Point and Island, to avoid the shoal that lies off the island, and when the point bears N. by W., she will be within the shoals, and may then edge away gradually to the southward, until Natal Flagstaff bears E. by N., then anchor in 6 or 5 fathoms, but not under the latter depth in a large ship.

Captain Thornhill sounded on the edge of Cara-cara Shoal, and from 5 fathoms shoaled suddenly to 6 feet coral rocks, Natal Hill bearing E. by S. $\frac{3}{4}$ S.

When on Racatt Shoal, in 5 feet coral bottom, Natal Hill bore N. E. $\frac{3}{4}$ N., Pulo Tamong S. $\frac{3}{4}$ E., Durian Point S. E. $\frac{1}{4}$ S., Cara-cara Hill N. by E. $\frac{1}{4}$ E., off Racatt Point about 1 or $1\frac{1}{4}$ miles.

Position of Natal. Natal is in lat. 0° 33′ N., and about lon. 99° 2′ E., by chronometers from Madras. Camphor, benzoin, and gold-dust, are the principal articles of export ; the imports, opium, iron in flat bars, salt, piece-goods of various kinds, stick-lack, gun-powder, &c. But the road is one of the worst on the coast, being much exposed to N.W. and westerly winds.

Pulo Tamong. PULO TAMONG, about $3\frac{1}{2}$ leagues to the southward of Natal Road, and near the coast, has good anchorage in 8 or 9 fathoms, between it and the main. Small vessels bound from Natal Road to the anchorage at Pulo Tamong sometimes pass inside the shoals, keeping near Point Racatt, and Durian Point, a little to the southward of the road ; taking care not to deepen above 6 fathoms till past the latter point, on account of two shoals that lie out in 7 and 8 fathoms. It is best, in a large ship, to steer out to the westward through the proper channel into 14 fathoms, and preserve this depth until Pulo Tamong is brought to bear E. S. E. or E. by S. ; she may then

steer for the north part of that island, and after rounding it at a moderate distance, anchor with the body of it bearing about West in 6½ or 7 fathoms, distant a quarter of a mile from the shore. The well containing good water is then abreast, on the low land near a small white sandy beach; fire-wood may also be got, and a ship is sheltered from westerly winds. In sailing to or from this anchorage, it is prudent to keep a boat sounding a-head on the edge of the reef, that stretches out 2 or 2½ cables' lengths from the island in some parts, with 6 fathoms close to it. There is a safe passage betwixt the south end of the island and the main. Wood and water.

Small ships coming from the southward, intending to enter Natal Road by the inner passage, may pass in mid-channel between Pulo Tamong and the main, in 6 to 8 fathoms. When through, the course is N. by W. and N. ½ W. for Durian Point, observing not to come under 9 fathoms in passing about mid-way between it and Pulo Tamong, on account of a shoal of coral rock with 10 and 11 feet water on it, which lies in 7 or 8 fathoms. When near Durian Point, borrow into 5 or 5½ fathoms; and in steering the same course towards the road, do not exceed 6 fathoms at the utmost, in passing it and Racatt Point, on account of the shoals that lie off these points, in 6½ to 8 fathoms. The snow Marlbro', in 1791, struck and beat off her rudder on one of the shoals, with Racatt Point E. ½ S., Durian Point S. E. easterly, Cara-cara Hill North, Natal Hill N.E. by E., outer extreme of Pulo Tamong S. ½ E., and another shoal with breakers S. W. by W. After getting off, she anchored in 7 fathoms soft ground betwixt these shoals, about 2 miles distant from Racatt Point.

AYER BONGY BAY, about 4 or 5 leagues to the S. Eastward of Pulo Tamong, has several fronting islands and shoals; ships not intending to touch at Ayer Bongy should keep well out in 26 to 30 fathoms water after passing Pulo Tamong, or nearer to the islets and shoals off the east end of Pulo Batoa than to the main, to avoid a shoal or bank, with irregular soundings from 15 to 4 fathoms coral on it, or probably less, and close to it 20 fathoms. It is extensive, and lies about 3 leagues S. W. by S. from Pulo Tamong, nearly mid-way betwixt the main of Sumatra and the small islands adjoining to the S. E. end of Pulo Batoa, the latter being a large island in the offing. There are three small islands off the S. E. end of Pulo Batoa, and a dangerous shoal, with some of the rocks above water, about 4 miles distant from the islands: when the rocks are on with the centre of the islands, they bear S. S. W., and about a league inside of them there are 24 fathoms, hard ground. Ayer Bongy Bay.

Ayer Bongy is in lat. 0° 11′ 42″ N., lon. 99° 21′ E., by chronometers, measured from Madras; and if bound there, from the anchorage under Pulo Tamong, steer about S. S. W. between the main and the island in 5 and 6 fathoms, soft ground, keeping rather nearest to the latter: from this island to Oojong Lalloo, the west point of Ayer Bongy Bay, pass inside the shoal mentioned above, by steering along the coast in 9 or 10 fathoms, which will be about 1½ or 2 miles off shore. By keeping in these depths, the shoal to the S.W. of Pulo Tamong will be avoided, and the shore, which in this space contains some bays or concavities, is safe to approach to 5½ or 6 fathoms. Directions.

The sea breaks on some of the shoals off Ayer Bongy Bay, when there is much swell, and between most of them there are safe channels, but the shoals are not always discernible when the sea is smooth. About 4 miles off Oojong Lalloo, with Pulo Pancal E.S.E. ½ S., there is a dangerous shoal, having only 9 feet on the shoalest part, and 14 to 17 fathoms near it on the outside. The Prince Henry struck, and beat off her rudder on this shoal in the night, when running for Ayer Bongy, after having anchored in the evening in 17 fathoms, hard ground, and parted from two anchors, by the rocks Dangerous Shoal.

cutting the cables in blowing weather. Great care is requisite in passing Oojong Lalloo, for several shoals front this part of the coast, the situations of which are imperfectly known. The ship Sylph beat off her rudder upon one of them in 1796, with the outer extreme of Pulo Tamong bearing N. N.W., and the point, with a small island near it, commonly called Oojong Lalloo, N. by W. westerly, 2 or 3 miles distant. Most of these shoals are from 2 to 4 miles off Oojong Lalloo, and bear between S. by E. and S. S. E. from Pulo Tamong. There is a passage inside all of them, by keeping within 1½ or 2 miles of the main, in from 4 to 6 fathoms, soft ground, when passing Oojong Lalloo and the two next points to the S. Eastward, then proceeding between Pulo Panjang and the main, to the anchorage under that island. This passage seems improper for large ships; and vessels of every description, by whatever channel they enter Ayer Bongy Bay, must keep a good look-out for the numerous shoals.

Pulo Panjang. Pulo Panjang, in lat. 0° 12′ N., lon. 99° 17′ 10″ E., by chronometers from Madras in 1822, is the largest island in the bay.

The small island Pulo Tanca lies near Oojong Lalloo, betwixt which and Pulo Panca, or Pancal, situated about a league southward from the former, the passage is safe, and the depths 10 or 11 fathoms, soft bottom; the passage into the bay is also safe to the eastward of Pulo Pancal, between it and Pulo Tellore, in lat. 0° 7′ 16″ N., situated at the S. E. part of the bay; and there is also a channel with 6 and 7 fathoms water in it, betwixt that island and Oojong Seecarboa, the S. Eastern extremity of the bay. A ship having entered the bay by the most convenient passage, may steer for Ayer Bongy flag-staff, situated on a bluff point or hill at the S. E. part of the bay, close to the north end of which is the river and landing-place. The common anchorage is abreast the river, bearing E. by N. ½ N., distant about a league, in 4½ or 5 fathoms, good ground. There is also anchorage under Pulo Panjang, the largest island in the bay, bearing about W. by S. from Ayer Bongy river, having a reef with breakers to the northward of it about a mile. Betwixt this island and Pulo Jambo, or Sambo, a small island to the westward, there is said to be a clear passage. To the northward of Pulo Tellore there is a reef, with breakers, and another to the eastward near the main, which require care in passing through the channels contiguous to that island.

Anchorage.

Shoals to the southward. To the southward of Ayer Bongy south point, which is of bluff appearance, there are several shoals; ships bound from that anchorage to the S. Eastward generally keep inside near the coast, until clear of them. Two of these shoals bear S. E. ¾ E. from Pulo Tellore,* and lie close together; from a small hill to the southward of Oojong Seecarboa, called also Oojong Gading, they bear S. S. W., and are distant from the point about 4 miles. There is a channel between these and another small shoal bearing S. S. E. 1 mile from them, having in it 14 and 16 fathoms. His Majesty's ship Drake, September 1st, 1809, struck on a small coral shoal, with the peak of Mount Ophir E. by N., Pulo Tellore North, Lalloo Point N.W. off shore 3 leagues, having close to it 23 fathoms, soft mud.

Mount Ophir. MOUNT OPHIR, in lat. 0° 5′ N., lon. 100° 0′ E., by chronometers from Madras, situated about 8 leagues inland, to the eastward of Oojong Seecarboa, appears like an obtuse cone by itself, separated from the chain of other mountains, and may be seen 110 miles in clear weather, it being the highest mountain on Sumatra visible from the sea. A volcanic mountain to the southward, about 9 or 10 leagues inland, is somewhat less elevated.

* These shoals are said by another navigator to bear S.E. by S. from Pulo Tellore, in a line; the southernmost distant from it about 4 miles. There are others about 6 miles to the S. Eastward of that island.

To the southward of Ayer Bongy Shoals there appear to be other shoals in the offing abreast of the Passamane Bay, one of which, about two cables' lengths in diameter, is thought to have 3 fathoms water on the shoalest part, with 21 and 22 fathoms close to it all round; the Prince Henry got on it, and saw the rocks along-side, with Oojong Seecarboa bearing N. by W. ½ W., the largest of Oojong Massang Hills E. by S., and a small hummock East, taken for the true point, the trees on the low land just visible from the deck, distant about 5 leagues. This shoal, consisting of black coral, is not easily discerned. Shoals in the offing.

In the Luconia, high breakers were seen on another shoal, bearing about S. W. by W. from Oojong Massang, which was thought to be about 6 leagues off shore, but Captain Bennet thinks it lies 8 or 9 leagues from the shore. With the largest of the Massang hills E. by N., there is said to be a shoal with breakers about 5 miles off shore, in 15 or 16 fathoms water.

OOJONG MASSANG, or Point Massang, situated in lat. 0° 17′ S. nearly, and about 10 leagues S. E. by E. from Ayer Bongy Bay, has a reef of foul ground stretching out about 2 or 2½ miles, which should not be approached under 17 fathoms; and near the point are the three Massang hills, the middle or largest having a tabular form, and the others resembling haycocks. Between this place and the south point of Ayer Bongy Bay, which is of middling height, the coast is low, and forms the Bay of Passamane. Oojong Massang and hills.

If a ship departing from Ayer Bongy Road intend to proceed to the southward inside the shoals, where the lead is a good guide and the anchorage safe, she ought to keep in from 5 to 8 fathoms, within 2 miles of the shore until abreast of Oojong Seecarboa, and pass this point about 1 mile distant; she may then, in daylight, borrow towards the shoals to 12 fathoms, but not under 9 fathoms towards the main, after the point bears about N. N. E., when turning to windward. When 3 leagues to the S. E. of Pulo Tellore, she may stand out to 15 or 16 fathoms, and keep in these depths, or steer a course for Oojong Massang, without hauling into Passamane Bay under 12 fathoms, or approaching too near the shoals in the offing, observing not to come under 17 fathoms in passing Oojong Massang. To pass inside the shoals.

To pass outside the dangers, after being clear of the shoal 3 leagues S. W. by S. from Pulo Tamong, a ship ought to keep well out in 25 or 26 fathoms, gradually rounding the shoals off Ayer Bongy; having cleared these, she should haul to the eastward to make Oojong Massang Hills, and round that point at 3 miles' distance in 17 or 18 fathoms, then keep in 17 to 20 fathoms for the outer Ticoo Island, observing to round it on the west side within a mile in 16 or 17 fathoms. A ship departing from Ayer Bongy Bay should, if this passage be adopted, sail out between Puco Pancal and Pulo Tellore, then steer S. by E. and S. S. E. until in 24 or 25 fathoms, and not come under 20 fathoms until near Oojong Massang; a good look-out is necessary for the 3 fathoms shoal of the Prince Henry, mentioned above. To pass outside of them.

TICOO ISLANDS, distant about 3 leagues to the S. E. of Oojong Massang, are three in number, small and woody, about 1½ miles apart, and the innermost is the same distance from the main. The proper channel is within a mile of the west and south sides of the outer island, in 15 to 17 fathoms, to avoid a shoal bearing from it about S. W. by W. 4 miles, in 25 fathoms, over which the swell may be seen to roll when it is abreast, if there is much sea: another shoal lies S. W. about 5 leagues from the outer Ticoo Island, no ground 50 fathoms near it. Should night be approaching, a Ticoo Islands.

ship may anchor in 9 or 10 fathoms, with the outermost island bearing West, distant about half a mile. This island is in lat. 0° 23′ S., and bears S. E. ½ S. from Oojong Scecarboa.

In coming near these islands from the southward, breakers appear, which seem to deny any passage among them; but betwixt the inner and middle islands there is a safe channel on either side a small coral bank, about a cable's length in diameter, situated about a quarter of mile from the innermost, and about a quarter of a mile from the middle island. It is steep to all round, with 7, 8, and 9 fathoms betwixt it and the middle island, but the passage on this side is much contracted by a spit projecting nearly 2 cables' lengths from the N. E. end of the island. This passage between it and the inner island has good room for anchoring occasionally, with soundings 6½ and 7 fathoms near the small bank, to 6 and 5 fathoms close to the island, over a soft bottom. From the south end of the inner island a shoal stretches out nearly a quarter of a mile, with 5½ fathoms, soft ground, close to, which must be avoided by a ship adopting the inner channel just described. To the southward of the middle island, distant about half a mile, the sea breaks on some rocks, to which a proper berth must be given, in ships that run under these islands for shelter from N.W. winds.

To the southward of the Ticoo Islands there are several shoals, and a great many others, well out in the offing, lie scattered from hence to the southward of Priamam, which may be considered the most dangerous part of the coast.

Pulo Cassey.

PULO CASSEY, or Cassiqua, in about lat. 0° 36′ S., bearing about S. E. 6 or 7 leagues from the Ticoo Islands, is covered with trees, very small, with a sandy beach, and distant about a league from the main. The passage in this track, inside the principal shoals, is generally considered the best, by keeping in from 16 to 12 or 10 fathoms, and the coast is safe to approach to 6 or 7 fathoms in many places. Some navigators state that there are no shoals under 16 fathoms on this part of the coast; others assert that some shoals are situated near it in 5 or 6 fathoms. The best guide, therefore, is, after leaving the Ticoo Islands, to keep in soft ground from 16 to 10 or 11 fathoms, for the bottom is all soft, except when near a shoal.

The coast from the Ticoo Islands to Pulo Cassey is a little hilly, and lies about S.E. by E. A shoal flat projects out nearly 2 miles in some places, on which the depths decrease regularly to 5 fathoms about 2 miles off shore. Exclusive of the shoal to the S.Westward of the outer Ticoo Island, already mentioned, the others, bounding the passage on the west side, are, one bearing about S. S. E. from the outer Ticoo Island, and nearly N.W. by W. from Pulo Cassey; when the breakers on it bore from West to N.W., distant about 2 miles, the depth was 16 fathoms: another, on which the sea sometimes breaks, bearing about S. E. by S. from the outer Ticoo Island, and nearly N.W. by W. from Pulo Cassey, with 20 fathoms close to it on the east side; and there is one, with 3 fathoms on it, bearing S. S. E. southerly from the outer Ticoo Island, and N.W. ¾ W. from the northernmost of the three Priaman Islands, being that nearest to Pulo Cassey. Betwixt some of these shoals there are safe channels; the Duke had no ground 35 fathoms in passing between two of them, about 5 leagues S. S. E. from the Ticoo Islands.

Priaman Islands.

THE PRIAMAN ISLANDS, three in number, lie abreast of the settlement of the same name on the main, about a league distant, afford shelter from N. W. or Westerly winds, and the northernmost has on it a well of fresh water, where ships are supplied. From this the middle island is distant about 1½ miles to the S. S.W., with 7 fathoms

water in the channel between them; but a reef of breakers projects about 2 cables' lengths from the west part of the northern island, having close to it 7 fathoms. The channel inside the northernmost island, having only $3\frac{1}{2}$ fathoms near the island, and decreasing gradually towards the main, is only fit for small ships. From the middle island, the southernmost one is distant 2 miles to the S.S. Eastward, and each of them is about half a mile in extent. There are several shoals about 2 or 3 miles to the westward of these islands, on which the sea breaks in bad weather, having 14 or 15 fathoms near them; but betwixt them and the islands the passage is safe, by keeping near the latter, in from 10 to 6 or 7 fathoms. The northernmost of this chain or group of shoals bears West from Pulo Cassey 2 or 3 miles, with a safe channel betwixt it and that island, with depths of 12 or 14 fathoms. On the east side of Pulo Cassey there is also a safe channel, with 6 fathoms near the island, decreasing regularly from 5 fathoms, about half a mile from it, to 3 and 2 fathoms about half a mile from the main. To the N.N.E. of this island, more than half-way to the main, there is said to be some rocks, with 4 fathoms outside of them.

Priaman River.

PRIAMAN (the Flagstaff), in about lat. 0° 40′ S., bears nearly S. E. $\frac{1}{2}$ E., 8 miles from Pulo Cassey; the river is small, and the entrance so shoal, that a pinnace cannot go in until near high water, and even then, not without danger. A little way out from the mouth of the river there is a bank, having on its north and south ends two patches of sand above water; within it, there are 2 fathoms sandy bottom.

From the Ticoo Islands to Priaman and Padang by the Inner Passage.

If you intend to proceed by the inner passage from the Ticoo Islands to Priaman or Padang, after having steered along the coast in from 16 to 8 or 10 fathoms, you may, when Pulo Cassey is approached, pass on either side of it at a small distance, as the wind permits, then steer through betwixt the middle and northernmost Priaman Islands, and anchor inside, under shelter of them. If bound to Padang, continue to keep near the east sides of the middle and southernmost islands in passing, and steer along the coast at a moderate distance until Pulo Ayer is approached, there being no danger in this part. There is a channel inside that island, but it is advisable to pass about 2 or 3 miles' distance outside, to avoid a shoal said to lie S.S.W. from it; when clear of this shoal, a direct course may be steered for Padang Flagstaff, or for the anchorage under Pulo Pisang, should unfavourable weather be apprehended, where ships are sheltered from N.W. and Westerly winds, this being the proper road.

Pulo Ayer, or Sow Island, called also Pulo Carong, distant about $1\frac{1}{2}$ miles from the shore, and 3 leagues to the N.W. of Padang Head, is small, with a reef projecting from its south end about a quarter of a mile: a shoal is thought to lie S. E. from it, and another to the S. S.Westward, stretching out a great way.

Padang Islands.

THE PADANG ISLANDS, seven in number, lie in the offing, and have several dangers amongst them. They are named numerally, Pulo Sato or 1st, Pulo Dua 2nd, Pulo Teega 3rd, Pulo Ampat 4th, Pulo Leema 5th, Pulo Annam 6th, and Puloo Toojoo the 7th.

Pulo Sato, the easternmost, is small, high, and flat, distant about $2\frac{1}{2}$ leagues W.N.W. of Pulo Pisang, and has a reef off its N.E. point about a mile, or rather an island just forming, called Pulo Passier.

Pulo Dua is a little larger than Sato, and lies to the S.W., having a safe passage between them.

Pulo Teega, about 4 miles to the southward of Dua, and 3 leagues to the W.S.W. of Pisang, is the largest of these islands; breakers and foul ground stretch from it a great

way to the N. Eastward, nearly shutting up the passage betwixt it and Pulo Dua, which is thought to be dangerous.

Pulo Ampat, about the size of Dua, lies to the westward, bearing from Pulo Leema S.W. ½ S.

Pulo Leema, one of the innermost islands, bearing about N.W. from Pulo Pisang and Pulo Sato, is small; a reef is said to project from it about 2 miles to the S.W.; another to lie 2 or 3 miles to the N. E.; one navigator says, E. S. E. 2 miles from it; but on the North side it is clear, and there is thought to be a safe passage betwixt it and Pulo Sato.

Pulo Annam, bearing from Pulo Leema W. ½ S., is of considerable size, and appears the last island in coming from the southward, as Toojoo is not then in sight; to the northward, and also betwixt it and Ampat, there are said to be shoals.

Puloo Toojoo, the northernmost of these islands, is nearly of the size of the former, and bears S.S.W. ½ W. from Pulo Cassey, to the northward of the Priamans. A coral bank, bearing N.W. by W. about 3 leagues from it, should be approached with caution, for it is steep from no ground to 10, 7, and 5 fathoms, and there may be less water on it. Close to, and amongst all these islands, the water is deep, and there is no good anchorage.

Padang Head. PADANG HEAD, in lat. 0° 56′ S., about lon. 100° 12′ E., having on it the Flagstaff, is a high bluff headland, with a rock close to it called the Whale, and forms the S.W. side of the river's entrance; about a mile up on the north bank, the FORT and TOWN are situated, but there are also houses and gardens on the opposite side. Bullocks, poultry, various fruits, and vegetables may be got here at moderate prices; and excellent water issuing from the rocks on the south side the river, which is conveyed in spouts to the boats.

Supplies.

Padang River. The river is only navigable by boats or small vessels in fine weather, the depths at low water being 8 and 9 feet at the entrance, and from 9 to 14 feet a little way inside, and the rise of tide is about 2½ feet on the springs. It is very dangerous to enter the river when the wind blows strong at west or north-west, for the sea then breaks entirely across the entrance, and a continued breaker extends from Padang Head to the S.W. point of the shoal that stretches nearly from it to within half a mile of the north end of Pulo Pisang. This place is in possession of the Dutch,* from which gold-dust, benzoin, and other articles, are exported, in exchange for opium, blue and white cloth, and other piece-goods.

In approaching it from the offing, the head will easily be known by its bluff aspect, and the coast from it southward being all bold high land; whereas, the land near the sea to the northward of the river is low, and all the coast is low from thence to Priaman, but far in the country the land is generally high.

Anchorage. A ship arriving when the weather is favourable, and intending to remain a little time, may anchor in 12 or 13 fathoms soft ground, with the Flagstaff bearing E. ½ N. or E., distant from the bluff headland 1¼ or 1½ miles. If the weather is threatening, or the stay to be 3 or 4 days, it will be prudent to proceed to the proper road, under Pulo Pisang.

Pulo Pisang. PULO PISANG, about 2 miles S. by W. from Padang Head, is a small island, about half a mile in diameter, where water may be got by digging wells 4 or 5 feet deep,

* And the whole of the settlements on the coast of Sumatra are now possessed by the Dutch, in conformity with the late treaty.

at the foot of the hills; the water, although soft and pleasant to taste, is said to be impregnated with saltpetre, and not very wholesome: the firewood is also indifferent. The rocky coral bank, stretching about 40 yards from the shore of this island, is steep to all round, and at the N. E. part there is a wharf for the convenience of landing: ships trading to Padang moor close to the east and S. E. sides of the island, sheltered from N.W. and westerly winds. When these winds prevail, boats cannot pass between Padang River and the ships under Pulo Pisang, on account of the breakers stretching across the passage.

Channels.

All round Pulo Pisang there is a safe passage of 6 and 7 fathoms, but it is narrow in some places, particularly betwixt the north end of the island and the extensive shoal bank that occupies most of the space between it and Padang Head, on the shoalest part of which are only $2\frac{1}{4}$ and $2\frac{1}{2}$ fathoms hard sand; this passage is not above a third of a mile wide, and is seldom used by large ships. The deepest water is close, or near to Pulo Pisang; a ship, to enter by the north channel, must bring the island well to the eastward, and round the north end in 7 or 8 fathoms about the distance of a cable's length or little more: the water will shoal as she runs in, to 6 and 5 fathoms, which is the least near the island; but towards the main, and Pulo Pisang Keecheel, or Little Pulo Pisang, lying near it to the eastward, the depths decrease to 4 and 3 fathoms hard sand. Having rounded the island close, and brought the wharf to bear W. by N., or W. N.W., she may moor in $5\frac{1}{2}$ or 6 fathoms, about 2 cables' lengths from the island. Large ships should always use the other channel in proceeding to the anchorage under Pulo Pisang, by steering direct for the west side of the island, and rounding it on the south side about a quarter of a mile distant; after bringing the body of the island to bear about N.W. by W., they may anchor and moor in 5 or $5\frac{1}{2}$ fathoms mud, about 2 cables' lengths from it, where they will be sheltered from westerly winds.

To sail to the anchorage.

Outer Passage from the Ticoo Islands to Padang.

In sailing from the TICOO ISLANDS to PADANG, if not intending to touch at Priaman, ships frequently pass outside the Priaman Islands and shoals, which is by some persons thought the best route. If adopted, keep in from 16 to 12 fathoms until within 5 or 6 miles of Pulo Cassey, then steer out betwixt the shoals which lie to the westward of that island and those to the southward of the Ticoo Islands, until in 35 or 40 fathoms, and from hence steer to the southward for Pulo Toojoo; after passing near it on the east side, steer to pass Pulo Leema and Pulo Sato, also on the same sides, and from thence to the anchorage under Pulo Pisang. If the wind be contrary, a ship, in working inside of these islands, ought not to borrow towards the main in the bight to the southward of Pulo Ayer, where there is said to be a shoal; nor too near the other shoal, to the S. S. Westward of that island.

Passage from Oojong Lalloo to Padang.

From OOJONG LALLOO (Ayer Bongy Bay) to PADANG, the outer passage seems preferable to any other with a fair wind; but as the current usually runs with the wind, this passage is not convenient in contrary winds, particularly when bound to the northward, being destitute of anchorage. If this route be chosen, at passing Pulo Tamong, keep well over towards the islets off the S. E. end of Pulo Batoa, to avoid the bank, nearly mid-way betwixt them and the main: having brought them to bear about N.W., steer to fall in with Pulo Toojoo, and passing to the eastward of it, of Pulo Leema, and of Pulo Sato, steer for the anchorage under Pulo Pisang, as directed above; or if it seem preferable with the prevailing wind, you may steer to the southward, outside Pulo Toojoo, Pulo Annam, and Pulo Ampat, then to the eastward betwixt Pulo Dua and Pulo Sato, keeping near to the latter in passing to avoid the

2 fathoms shoal that lies about 4 miles S. by E. $\frac{1}{4}$ E. from it, and from the south point of Pulo Pisang W. by S. southerly 2 leagues. From Pulo Sato, steer direct for the anchorage under Pulo Pisang. It would be imprudent to attempt to pass betwixt Pulo Dua and Pulo Teega, for the rocks stretching across seem to deny any safe passage.

Passage from Oojong Lalloo to Moco Moco.

If bound to Moco Moco, and not to touch at Padang, continue to keep outside of all the inner islands adjacent to the coast, between which and the chain of large islands in the offing there is a safe channel, from 10 to 12 leagues wide; but a small dry sand, about 3 or 4 leagues N.W. from Pulo Musquito, and nearly the same distance from Pulo Toojoo, must be avoided. It will be proper to keep nearest to the inner islands, and make Idrapour Point, to prevent being driven leeward when northerly winds prevail.

Passage from Pisang to the northward.

From PULO PISANG to the NORTHWARD by the MIDDLE PASSAGE, the course is N.W. by N., to pass between Pulo Leema and Pulo Ayer about mid-channel, in soundings 22 to 26 fathoms; by which, the shoal projecting E. S. E. 2 miles from Pulo Leema, and the coral patches near Pulo Ayer, will be avoided. Having passed these islands, there is no danger till the Priaman Islands are approached; the coast may be borrowed on to 10 or 12 fathoms, when necessary to anchor.

On drawing near to the Priaman Islands, haul out for Pulo Toojoo, to avoid a large shoal bearing W. S. W. 2 miles from the outer Priaman Island. When well over towards Pulo Toojoo, a N.W. $\frac{1}{2}$ W. or N.W. by W. course should be steered, to avoid the shoal bearing W. N. W. from that island, and others lying in 30 and 35 fathoms, towards the shore. When 5 leagues to the N.W. of Pulo Toojoo, haul in again towards the main to make the outer Ticoo Island, for a shoal bears S.W. from it about 5 leagues, having no ground near it with 50 fathoms line; and another shoal bears W. S. W. from it about 3 miles.* Being clear of these, steer about N. W. by W. to pass between the small islands off the S. E. end of Pulo Batoa and Oojong Lalloo, taking care to keep between 25 and 30 fathoms, for in 20 and 22 fathoms lie several shoals; and in 34 fathoms, a very large and dangerous one. The soundings, therefore, must be the principal guide in this run of about 15 leagues; which may be pursued night or day with proper attention to the lead, and preserving the depths mentioned.

When Pulo Batoa is seen bearing about N.W. by W., or W. N. W., steer over for the islands off its S. E. end; the depths will be from 16 to 20 fathoms, and when within 4 or 5 miles of them, a course about N.W. by N. should be steered until past the shoals off Natal; for it would be imprudent to come under 22 fathoms between Pulo Batoa and the Sugar Loaf, at the south entrance of Tappanooly Bay. If not bound into that port, Mensular may be passed on the outside at a small distance, to avoid the shoals in the offing. There is no danger in the channel inside that island, excepting a shoal in 9 or 10 fathoms near the main, about one-third the distance from Battoo Barroo Point towards Pulo Sokum. From Mensular, the best course is about W. N. W., preserving soundings of 26 to 27 fathoms, by which the Triangle Shoals, and several others in-shore, will be avoided. When the depths increase to 28 or 29 fathoms, a N.W. course will be proper, not coming under 22 or 23 fathoms: Pulo Lacotta will

* Another account places it S. W. by W. 4 miles, and Captain Bennet says it lies S. W. 4 miles from the Ticoo Islands.

be seen, and the small sand-bank bearing N. ½ W. from it, called Bird Island, is said to lie in 31 fathoms, having a reef extending to the N. W. 1½ or 2 miles. Sinkel Point, forming a bluff, covered with trees, will be next discerned; this may be passed about the distance of 4 miles, the depths then decreasing to 18 or 19 fathoms. Passage Island will soon be seen to the N. Westward, and the greatest caution is requisite in this part, particularly if the wind is contrary; sailing towards the island, it should be kept between N. N. W. and N. W. by N., in soundings 16 to 14 fathoms, for about half-way betwixt it and the main, the middle bank extends nearly N. W. and S. E., having great overfalls upon it, in some places only 2½ fathoms, rocks With a leading wind, Passage Island N. W. by N. is the best bearing until within about half a mile of it, and then it may be rounded about this distance on the east side. Being through this intricate passage, a course about N. W. should be steered, then towards any of the northern ports, as circumstances require; but great care is requisite in passing between lat. 3° to 4° N., for there are many shoals interspersed along the coast adjacent to Soosoo Bay, and to the southward of it; others lie 9 or 10 miles off shore, with no ground 50 and 60 fathoms close to them on the outside. These outer shoals seem to lie on the edge of the bank of soundings; one of them is in lat. 3° 4′, and another in 3° 30′ N., already mentioned.*

FROM PADANG TO FORT MARLBOROUGH.

Coast from Padang southward.

FROM PADANG, to the distance of 8 or 9 leagues southward, the coast is intersected by numerous bays and inlets, several of which, being protected from the sea by the islands contiguous to them, form excellent harbours. The land near the sea is generally of moderate height, and farther in the country, more elevated.

Boongas Bay.

BOONGAS BAY, about 5 or 6 miles to the S.E. of Pulo Pisang, is a safe harbour, with 14 or 15 fathoms in the entrance, and from 10 to 6 fathoms inside; but there being a shoal nearly in the middle of the bay, a little more than a quarter of a mile to the eastward of the small island Pulo Cassee, it is proper, going in, to keep near the north point, and anchor between that side and the island, where there is good shelter. There is also a shoal to the N. N. E. of Pulo Cassee, near the north side of the bay: but by keeping near the island, you pass in safety between it and either of those shoals, and anchor to the eastward of it, if you do not intend to go inside. At the S. E. angle of the bay there is a harbour or cove, with 12 to 6 fathoms water, secured from all winds, having shoal water off the point and island that form the N. E. side of the entrance. There are villages all round this bay, and from thence to Padang. About W. by N., 1¾ miles from the north point of the bay, lies a dangerous rock, with 15 and 16 fathoms close to it, between which and Pulo Teloor, a small island about a mile to the North-eastward, there is a safe passage; but it is best to pass outside the rock in 17 or 18 fathoms, and after bringing the entrance of Boongas Bay to bear East,

* See paragraph on Point Labon, p. 81.

or the middle of a small hill at the bottom of it, on with a high hill inland, a ship is clear to the southward of the rock, and may steer direct for the bay; and when in the entrance, she must borrow toward the northern side, to avoid the shoal a little inside, already mentioned.

There is a point of land about 2 miles to the E. S. E. of Pulo Pisang, that forms the north extreme of Brandy Wine Bay, opposite Pulo Teloor: when that point is in one with a small hill near it, bearing N. by E. easterly, the same transit line passes over the rock mentioned above, and touches the west part of Pulo Seronda, or Bobeck, then on the opposite bearing.

Pulo Senaro and surrounding dangers.

PULO SENARO, or LACRONE, bears S. S.W. westerly from Pulo Pisang, distant about 6 miles, from which a reef, always visible, bears S. W. by W. westerly about a league, being nearly mid-way between it and the two fathoms shoal, already mentioned, to the southward of Pulo Sato. The water is deep, from 35 to 40 fathoms around these shoals, and between them and the adjoining islands; if, therefore, the shoals are seen, or their positions known, a ship may pass between them with safety.

From Pulo Senaro, a little more than a mile to the N.E., there is another shoal. having on it 3 fathoms, and about 2 miles S. E. by S. from the same island there is a shoal nearly mid-way betwixt it and Pulo Seronda; another shoal is said to lie about a league nearly S. by W. from the former island.

From Pulo Pisang to seaward.

Being bound from Pulo Pisang to the southward, and wishing to run out speedily clear of the islands into the open sea, a ship may steer to the S. W. to pass close on the N. W. side of Pulo Senaro, betwixt it and the reef that is always visible, observing, when the island is approached within 2 miles on the N. E. side, to give a berth to the 3 fathoms shoal, by edging a little to the westward, and avoiding a direct line that passes through Pulo Pisang and Padang Head, which also passes through the shoal. To pass out to the southward of Pulo Senaro, when distant 2 miles, it should be brought to bear S. W. by W., or W. S.W.; a direct course, about S.W., may then be steered to pass close to its south point, and the same course continued about 2 or 3 miles beyond it will carry a ship clear of the two shoals mentioned to the S. E. and southward.

Shoals.

The snow Marlbro' struck on a shoal, with only from 6 to 9 feet water over the coral rock, Puso Pisang bearing N. N.W., Pulo Senaro S. W. $\frac{1}{2}$ W., distant from the main, 3 miles. The same vessel saw a sandy patch above water, surrounded by a large coral reef, bearing in one with Pulo Senaro S. E. $\frac{1}{2}$ E., distant from that island 4 or 5 miles; Padang Head bore at the same time N. E. by E.

The Research found only $2\frac{1}{4}$ fathoms on a shoal, with Pulo Senaro bearing North, and Pulo Pergany E. S. E. This vessel had $3\frac{3}{4}$ fathoms on another shoal, with Pulo Senaro bearing N. W., distant $2\frac{1}{2}$ miles, and Pulo Seronda S. E. $\frac{1}{2}$ S. Pulo Pergany bearing East 4 or 5 miles, saw breakers on a shoal in one with Pedang Head N. by E. Had 5 fathoms rocks on another shoal, with Pulo Niamo bearing N. W., Pulo Ayer Besar E. by S., and Pulo Babee Besar about E. N. E.

From Pulo Pisang to the southward.

THE BEST ROUTE from Pulo Pisang, when bound southward, is to steer for Pulo Seronda, or Bobeck, bearing from it nearly South, distant 8 miles, taking care, with a working wind, to keep Pulo Pisang to the northward of N. N. W. in standing towards the rock off Boongas Bay. When near Pulo Seronda she may steer about S.S.W. along the west sides of it, Pulo Bintango, and Pulo Marra, the next islands to

the southward, and on either side of Pulo Niamo, or Musquito, a small island in the offing, distant about 3 leagues S. by W. $\frac{3}{4}$ W. from Pulo Seronda. There is also a narrow but safe passage inside these islands, having soundings from 20 to 36 fathoms, and is generally adopted as the best: the only known danger is a shoal near half a mile E.N. eastward from Pulo Oolar, a small island about mid-channel between Bintango and Marra. Betwixt the shoal and a spit projecting from the north point of Pulo Oolar, there is a safe passage, and it lies rather nearer to the islands on the east side the channel than to Pulo Oolar; but the channel outside of Pulo Oolar, between it, Bintango, and Marra, is clear of danger.

PULO MARRA, in about lat. 1° 12′ S., and $1\frac{1}{4}$ miles in extent, is inhabited, and affords good water: there is anchorage in a small bay, formed between the N.E. point and a reef that projects from an islet to the southward. There is also anchorage under Pulo Bintango, or Pergany, the middle island on the outside the channel; and under all those contiguous to the main that form the east side of the channel, there is anchorage from 10 to 20 fathoms, and shelter from N.W. or westerly winds. Pulo Marra.

Opposite these islands there are three bays or harbours on the main of Sumatra; the northernmost, Soongey Peesang Bay, bearing about E. by N. from Pulo Seronda, has two rocks in the entrance, with $1\frac{1}{4}$ and 2 fathoms water on them; between them and the northern shore, close to the latter, there is a narrow passage with 15 and 17 fathoms, decreasing inside to 8 and 9 fathoms: there is also a narrow passage between the islets that lie off its entrance and the southern point of the bay, but this place is not very safe for large ships. Soongey Peesang Bay.

Soongey Peenang Bay, bearing about N.E. from Pulo Marra, is safe to enter, by steering in about mid-channel, or borrowing towards the northern side at discretion; in this bay a ship is sheltered from almost every wind, it being only a little open to S. S. Westward, and the depths are from 16 fathoms in the middle, to 7 or 8 near the shore, decreasing to 4 and 3 fathoms in the north part. Soongey Peenang Bay.

PULO SAYTAN HARBOUR, formed inside the two large islands Pulo Sabadda and Pulo Troosan, is about 5 miles in extent, N.W. and S.E., and very safe, the depths in it generally from 16 to 8 or 9 fathoms, soft bottom. There are two passages into it; the northern one, about one-third of a mile wide, bearing East northerly from the north end of Pulo Marra, and close to the mouth of Soongey Penang Bay; to enter the harbour by this passage, a ship must keep to the northward into the mouth of that bay, to avoid a 2 fathoms rocky shoal a little more than half a mile West from the north bluff point of Pulo Sabadda, which forms the south side of the entrance. This bluff point, the rocky shoal, and north point of Pulo Marra, are on the same transit line, bearing nearly East and West of each other; a ship must, therefore, keep to the northward of that line in approaching the entrance of the harbour, which is safe after having passed the shoal. The south entrance, about E. S. E. from the south end of Pulo Marra, has in it two islands, and an islet farther out close to Pulo Sabadda, which forms the north side, as Pulo Troosan does the opposite: the best passage is betwixt the two islands in the entrance, that between the southernmost and Pulo Troosan is also safe, with soundings from 10 to 20 fathoms, and they are about one-sixth of a mile wide; between the northernmost island and Pulo Sabadda there is no passage. Pulo Troosan appears as a projecting part of the main, and is separated from it by a very narrow passage, with 3 feet water in it. Pulo Saytan, in the middle of the harbour, is nearly surrounded by shoal water and islets; the N.E. arm of the harbour, to the north- Pulo Saytan Harbour.

ward of that island, is full of shoals, and should be avoided. E. by N. from it, upon the main, and close to the shore, there is a watering place.

From Pulo Marra southward.

DEPARTING from PULO MARRA, it is proper to steer to the S. Eastward, passing near the west point of Pulo Troosan, and from thence on either side of Pulo Babee-kecheel, a small island about $2\frac{1}{2}$ miles to the southward of Troosan. Having passed near this island, to avoid the shoal in the offing, a south-easterly course may be continued between Pulo Babee-besar and Pulo Ayer, in moderate depths, from 25 to 16 fathoms: from these islands, the Flagstaff of Pulo Chenco may be seen upon a round hill to the E. N. E., towards which, a ship intending to touch there ought to steer, leaving the small islands Samanky and Cassee to the northward, and she may anchor off Pulo Chenco in 12 fathoms. There is a harbour or cove inside the island, with two passages leading to it; the proper one, on the south side of the island, has 9 and 10 fathoms water, and there are from 7 to 4, or 5 fathoms inside, in the harbour. This is a place of considerable trade, and has a wharf for the convenience of lading and unlading goods. To the northward lies Chenco Bay, containing regular soundings, and good anchorage at the N.W. part, close to Loompoor Village.

to Pulo Chenco.

Pulo Ayer-Besar, and neighbouring islands.

PULO AYER-BESAR, in lat. 1° 24′ S., is the residence of a Malay Chief, and has on it a conspicuous round hill; on the south side of it is Pulo Ayer-kecheel, also inhabited, and a rocky shoal projects from it nearly to the former island. The channel inside these islands, and to the southward of Pulo Babee-besar and the two small islands to the eastward, is 3 miles wide, and very safe. There is also a safe passage contiguous to the main, inside of Pulo Babee-besar, Samanky, and Cassee, by keeping nearest to the island, in from 7 to 10, or 12 fathoms. Pulo Babee Bay, to the northward of the islands of that name, and on the east side of Pulo Troosan, has regular soundings, and is sheltered from north-west and west winds. At Pulo Babee-besar wood and water, poultry and sheep may be procured.

About a league South from Pulo Marra, and about the same distance E. N. E. from Pulo Niamo, or Muskito, a small isle in the offing, there is a rocky bank, with 17 and 20 fathoms on it, and 40 fathoms a little way outside; but the only known danger near the passage between Pulo Marra and Pulo Ayer-besar is a coral shoal, with 2 fathoms on it, and from 27 to 33 fathoms around. From this shoal the west point of Pulo Troosan bears N. 2° E., Pulo Babec-kecheel N. E. by N. $\frac{1}{4}$ N. about 4 miles, which is the nearest island to it, the south point of Pulo Babee-besar N. E. by E. $\frac{1}{2}$ E., and the top of the hill on Pulo Ayer-besar E. by S. From this island S. 3° W., distant 4 or 5 miles, lies a small dangerous shoal, over which the sea is seen to roll when there is much swell.

Coral Shoals.

Several Bays.

To the eastward of the island last mentioned there are the two bays of Battuwang and Teloo Cassee, on the main, both containing good anchorage in moderate depths, but open to westerly winds. About 2 leagues farther to the S. E. is situated Batang Capay Bay, having also good ground for anchoring, but open to S. Westerly winds. Nearly West from this bay $3\frac{1}{2}$ leagues, and $2\frac{1}{2}$ leagues to the S. S.W. of Pulo Ayer *besar*, lies Pulo Panneu, or Orange Island, which is small, with 40 and 43 fathoms close to it on the outside. Captain Kirton places a shoal 2 miles E. by N. from it, the existence of which seems doubtful.

Orange Island.

Islands and shoals near the coast.

The other islands from thence to Ayer Raja, that front the coast at 2 to 5 leagues' distance, are Pulo Tellore, in about lat. 1° 38′ S., distant $2\frac{1}{2}$ leagues to the S. E. of Orange Island, and about the same distance from Tellore Bluff Point, on the opposite

shore; to the northward of which lie some rocks near the main, dry at low water; and about a league N. by W. from Pulo Tellore there is said to be a shoal; from that island breakers also project a quarter of a mile. Pulo Ayer is about 5 miles to the S.W. of Pulo Tellore; to the N.W. of it, about a league, there is said to be a shoal, and another about $1\frac{1}{2}$ miles to the southward. Sandy Island bears S. E. by E., about 7 miles from Pulo Ayer, and Tree Island bears about S. S.W., $2\frac{1}{2}$ leagues from Sandy Island, having a reef of breakers to the N. Westward of it about a league.

PULO BRINGEN, the southernmost of this chain of islands, in about lat. 1° 58′ S., is 4 leagues from the main, and 3 or 4 miles E. by S. $\frac{1}{4}$ S. from Tree Island; there is a $2\frac{1}{2}$ fathoms shoal about $1\frac{1}{2}$ miles to the N. N.W. of it, and S. by E. from it about 5 miles there are 3 fathoms on another rocky shoal. From one of the reefs of breakers, Pulo Bringen is said to bear S. S. E. $\frac{3}{4}$ E., and Tree Island S. $\frac{3}{4}$ E. When in 24 fathoms about 2 leagues off shore, with the Volcano Mount E. $\frac{1}{4}$ N., and Pulo Bringen South, a sand in one with breakers bore N.W. $\frac{3}{4}$ W., other breakers S.W. $\frac{3}{4}$ W., and a reef on which breakers were visible at times, W. $\frac{1}{4}$ N. Pulo Bringen and shoals.

There is also a reef under water to the E. N. E. of Tree Island, rendering the passage between it and Pulo Bringen unsafe.

Opposite to those dangers in the offing, there is a reef within 2 or 3 miles of the coast, on which the sea breaks in bad weather; it bears from Pulo Bringen N. 64° E., distant 16 miles, and is on with Tellore Bluff Point, bearing N. N.W. $\frac{3}{4}$ W. About 4 miles to the westward of it there are 15 and 16 fathoms water, and 24 fathoms near the dangers in the offing.

Departing from Pulo Chenco, or having passed through between it and Pulo Ayer-besar, if a ship is bound to Ayer Raja, it will be prudent, in coasting along, to keep 4 or 5 miles off shore, in soundings from 20 to 25 fathoms, to avoid the dangers near it; care will also be requisite, to give a proper berth, in passing, to the shoals and islands in the offing described above; more particularly in the night, for in the day, with a good look-out, most of the dangers will be visible, and a ship may then borrow occasionally to 15 or 16 fathoms. When Pulo Bringen bears about W. S.W., she may haul to the eastward for the anchorage of Ayer Raja, which is not much frequented, being considered unsafe with N.W. and westerly winds. From Pulo Chenco to Ayer Raja.

AYER RAJA is not easily known, the village being about 2 miles up the river, but a flag is sometimes hoisted near the entrance. It may be known by a remarkable round hill covered with trees near the sea, about 4 miles to the northward of the river's mouth, called by some Volcano Mount: when at anchor in $5\frac{1}{2}$ fathoms soft clay, with the Flagstaff at the mouth of the river bearing E. by N. northerly, near 2 miles, this mount will bear E. N. E. $\frac{3}{4}$ N., and Pulo Bringen W. $\frac{3}{4}$ N. It is prudent not to anchor under 8 fathoms, with the Flagstaff East, Pulo Bringen W. $\frac{1}{2}$ N., and Indrapour Point S. $\frac{1}{2}$ W., off shore about $2\frac{1}{2}$ miles. If north-westers are apprehended, a ship may anchor out in 12 or 13 fathoms, in order to clear Indrapour Point, should she be unable to ride. Ayer Raja. Anchorage.

It is dangerous to enter the river with a boat at low water, particularly when there is much swell, for the surf is then high on the bar.

INDRAPOUR POINT, in lat. 2° 5′ S.,* lon. 100° 55′ E., by Captain William Indrapour Point.

* Captain Ashmore, in 1827, made it in lat. 2° 9′ 59″ S., lon. 100° 50′ 17″ E., measured from Batavia by chronometers, allowing the latter in lon. 106° 51″ 45′ E.

Owen's observations, or 1° 28′ West of Rat Island by chronometers, and 4½ leagues to the southward of Ayer Raja, is low, and its extremity covered with trees; as foul ground projects out a little way, it should not be approached too close. From this point the coast stretches to N. Eastward, and forms an extensive open bay between it and Ayer Raja, with Indrapour River at the bottom of it, a little to the southward of the latter place. From hence to Fort Marlborough there are no islands near the coast, Pulo Bringen being the southernmost of the chain or long range, which may be said to commence at Passage Island, near Sinkel.

Leaving Ayer Raja, or the channel betwixt it and Pulo Bringen, a ship should haul out of the bay, and pass Indrapour Point at 3 or 4 miles' distance; if the wind be steady, and bound to Bencoolen, a direct course may be steered along the coast, keeping from 2, to 4 or 5 leagues off; but with light winds it will be proper to preserve moderate depths, from 15 to 25 fathoms, for anchoring if requisite; never exceeding 30 fathoms, nor borrowing under 10 fathoms towards the shore, in case of getting into rocky ground.

Moco Moco. MOCO MOCO, in about lat. 2° 34′ S., distant 11 or 12 leagues to the S. Eastward of Indrapour Point, situated at the bottom of a small bay, is a place of some trade; the two points that form the bay are covered with tall trees, and about 4 or 5 leagues to the N. Westward, a remarkable gap in the trees may be discerned in coming from that direction. Having passed Indrapour Point, about 4 miles' distance, a ship bound to Moco Moco should coast along about the same distance until near it; the houses and Flagstaff will then be discerned, and she may anchor in 10 fathoms soft ground, with the latter bearing E. by N., and a remarkable peak inland N. E. ¼ N., off shore 2½ or 3 miles. Small vessels may, if requisite, anchor in 6, 7, or 8 fathoms. The country boats must be employed in landing, for a ship's boat cannot, without great danger, on account of the surf. Near to Moco Moco River is situated that of Mandoota, the mouth of which may be seen in coming from the southward. About 3 or 4 leagues W. N.W. from Moco Moco there is a bank of rocks and sand, having on it from 18 to 11 fathoms in most parts: but by some navigators it is thought to be dangerous, the sea breaking on it in blowing weather, and *said* to have only 2½ or 3 fathoms water an the shoalest part; consequently, it should be approached with caution.

(Margin notes: Anchorage. — A shoal.)

Ayer Dicket. AYER DICKET, about 3 or 4 leagues to the southward of Moco Moco, and a little southward from a bluff point clothed with trees, may be known by a clump of tall trees, growing thicker on each side the mouth of the river than anywhere else. There being a dangerous bar, the river is unnavigable, even for boats. A ship may anchor off it, in 8 or 10 fathoms.

A ship bound from the southward to Moco Moco may round the bluff point to the northward of Ayer Dicket in 8 or 9 fathoms, when the southerly monsoon prevails, and haul gradually into the bay, to prevent being driven to leeward. Between that point and Moco Moco a shoal bank projects several miles from the shore, said to have only 4 and 5 fathoms rocky bottom on it in some places; and the coast is lined with a sandy beach, towards which a great swell generally rolls, and this is the case on most parts of it, particularly to the south of the equator.

Bantall River. BANTALL RIVER, situated in a bay about 4½ leagues to the S. Eastward of Ayer Dicket, may be known by two white cliffs a little to the northward of it, appearing from the offing like boats' sails: in coming from the northward towards it, a ship may coast along in 10 to 15 fathoms, taking care not to borrow on the shore

where the bottom is found rocky. The best anchorage in the road is in 8 or 9 fathoms ooze and sandy bottom, with the white cliffs N. N. E., and the river's mouth N. E. Anchorage.

Between Bantall and Ipoe are three rivers, Triamang, Ayer Etam, and Ayer Ruttah; Triamang, the northernmost, may be known by a small red cliff forming the low point on the north side the entrance: the coast, embracing those rivers, may be approached to 12 or 14 fathoms, regular soundings in most places. Other Rivers.

IPOE, or AYPOUR, about $6\frac{1}{4}$ leagues to the S. E. of Bantall, where there is another river in the bottom of a bay, may be known by three red cliffs to the southward, and three green hills near the sea; with the central one of these bearing N. E. by E., large ships should not anchor under 9 or 10 fathoms, where the road is tolerably clear; further in, the bottom is foul and the water shoal. Ipoe, or Aypour, and the coast adjacent.

From the shore to the southward of Ipoe, a bank of foul ground projects nearly 2 leagues to seaward, having on it from 6 to 10 fathoms, coral and coarse sand; and on its outer edge there is a coral rock, on which the Swallowfield struck, bearing S.W. by S. 2 leagues from Ipoe, covered with only 14 feet water, and having from 8 to 16 fathoms all round. It should not be approached under 10 or 12 fathoms, as it is very steep, there being a little way outside of it, 30, 40, and 50 fathoms, then no ground. When Ipoe bears N. E. by E., a ship is clear to the northward of the bank and rock, and may then haul nearer to the land if coming from the southward, but when abreast of this danger, she ought to keep about 3 leagues off shore. A bank and dangerous rock.

CAYTONE, in about lat. 3° 29′ S., distant about 6 leagues to the S. Eastward of Ipoe, has a white cliff to the southward like a castle, and breakers to the northward nearly a mile from the shore. Rocky ground with irregular soundings project about 2 leagues out from this place, and from hence northerly towards Ipoe: a ship ought, therefore, to keep well out in sailing between them, for about 4 leagues off this part of the coast, where no soundings are got, the water will shoal suddenly if she stand towards the shore. Nearly mid-way between Ipoe and Caytone there is a small place, called Sablat, appearing like an opening betwixt reddish cliffs; and Caytone has a similar appearance. Caytone.

From Caytone the distance is 8 or 9 leagues S. Eastward to Fort Marlborough, and the coast in this space is safe to approach occasionally to 11 or 12 fathoms, the soundings being more regular than farther to the northward; from 12 to 20 fathoms are good depths to preserve in sailing along. From Caytone to Fort Marlborough.

LAYE, a small place about 2 leagues to the southward of Caytone, has regular soundings off it; when in 9 fathoms with the Sugar Loaf bearing E. by N., Laye House, situated in a small bay, bears N. E. $\frac{1}{4}$ N. Polley, another small place, lies $1\frac{1}{2}$ or 2 leagues more to the southward, having some red cliffs between it and the former place. Laye and Polley.

Songy Lamo Point, about 2 leagues southward from Polley, and near 5 miles to the northward of Fort Marlborough, ought not to be approached under 10 fathoms, for a rock with only 2 or $2\frac{1}{2}$ fathoms on it, and 7 fathoms close to, is distant about $1\frac{1}{2}$ miles from the point, bearing from it and the Sugar Loaf, when in the same transit line with each other, S. W. by W., and from the flagstaff on the steeple about N.W. by W. Rock off Songy Lamo Point.

BENCOOLEN RIVER, which falls into the bay, about $1\frac{1}{2}$ miles to the N. East- Bencoolen River.

ward of Oojong Carrang, the point on which Fort Marlborough is built, has from 4 to 6 feet on the bar, and from 8 to 12 feet inside. The English at first formed their settlement here, but they considered it unhealthy, and removed to the south point of the bay, where Fort Marlborough was built on ground a little more elevated than the former, and is now a Dutch possession, according to a treaty with the Netherlands Government.

Fort Marlborough.

FORT MARLBOROUGH is in lat. 3° 48′ S., lon. 102° 19¼′ E.,* by mean of several chronometric admeasurements from Batavia by Captain Ashmore: but Captain William Rees made it 22° 7′ E. from Point de Galle, by four chronometers, their greatest difference 4 miles, after a speedy passage from thence, which would place it in lon. 102° 27′ E. By the same chronometers, he made 4° 25′ E. from Fort Marlborough to Batavia, which would also place it in lon. 102° 27′ E., allowing Batavia to be in 106° 52′ E. Oojong Carrang, the point on which the fort and town are built, has a level appearance and is moderately elevated; but the land in the country to the North-eastward is high and hilly; one of the hills, called the Sugar Loaf, has a conical form, and is a most conspicuous mark for avoiding the shoals.

The Road.

The common anchorage in the road is about mid-way betwixt Rat Island and the town, in 11 or 12 fathoms; under 11 fathoms the bottom is mostly rocky, and also, farther out, it is foul in some parts. The York anchored in 10½ fathoms with the flagstaff E. by N. ¼ N., Poolo Point S.S.E., and the Sugar Loaf N.E. ¼ N., distant about 3 miles from the fort, and had her cable cut through by the rocks. She afterwards anchored in 12 fathoms clear ground, with the flagstaff E. N. E., Poolo Point about S.E. by S., and Rat Island S.W. by S. In the Atlas, we lay 20 days in April and May, in 11 fathoms clear ground, Rat Island S.W., Sugar Loaf N.E., the flagstaff E.N.E. ½ N., Black Rock breakers S. E., and Poolo Point S. S. E. ¾ E. A ship ought not to go under 11 fathoms, and if to remain in the road a few days, it may be prudent to examine the bottom by sounding around in the boat within the range of the cable, for ships do not moor, unless it be with a hawser and small anchor to steady them.

Anchorage under Rat Island.

Close to the entrance of Rat Island Basin, and fronting it to the distance of a mile to the N. E., the bottom is mostly soft, where ships, in the southerly monsoon, may anchor in 13½ or 14 fathoms under the reef that surrounds it. When the N.W. winds prevail strong from September to March, a heavy sea frequently rolls into the road, making ships labour greatly at their anchors.

Captain Huddart advises ships that do not go into Poolo Bay, or Rat Island Basin, in this season, to anchor to the eastward within a mile of the island, in about 15 fathoms, where the sea will be partly broken by the reef. The same business may be done from this station in favourable weather as if a ship were in the road, for sailing boats, passing to and from Fort Marlborough, are confined to one trip in 24 hours by the land and sea breezes; besides, the N.W. winds only are to be dreaded, and if a ship part her cables, she may run for Poolo Bay with little or no canvas spread.

Inner Road.

There is an inner road, with 4 and 4½ fathoms water, a little to the northward of the fort, and inside the North and South breakers, which is sometimes frequented by small vessels in the fair season, for the convenience of loading and unloading. But if unacquainted, it is imprudent for boats or vessels of any kind to venture inside with-

Caution in passing the North and South breakers.

* In 1822, the difference of longitude, measured from Madras by mean of two chronometers, made Fort Marlborough in lon. 102° 16′ E.: therefore, Captain Rees' longitude is probably too far east. By mean of northern and southern stars, and the sun, observed in 1822, the turret of the fort was found to be in lat. 3° 47′ 38″ S.

out a guide, for several boats have been lost upon the North or South breakers, which are not always visible when the sea is smooth; for then a high surge is only at times seen to roll over the rocks, which would prove fatal to any boat that unfortunately got into it.

To pass from the road in a boat through the channel between the north and south breakers, steer from Rat Island towards the Sugar Loaf, keeping this rather on the starboard bow until the steeple appear on the West, or *sea-face*, of the nearest bastion; or until a very conspicuous tree appears behind the south end of the N.W. or *sea-curtain* of the fort; the boat will then in either case be inside, or past the breakers, and may haul in close to the shore reef, keeping along the edge of it until within the fort, and opposite to the landing wharf.

With a northerly wind, it is best to pass to the northward and eastward of the north breaker, by keeping 2 miles to the N. Westward of the fort until the conspicuous tree is brought behind the N. E. end of the N.W., or *sea-curtain;* or bring the steeple behind the N.W. face of west bastion, and you will avoid the north breaker by passing to the N. Eastward of it.

With a southerly wind, when coming from the road, it is best to steer for the town, and pass to the southward of the south breaker, and close along the edge of the shore reef, from its outer extremity to the landing-place.

Close to the north and south breakers there are 7 and 8 fathoms on the outside, and 6 fathoms inside of them. Nearly abreast the fort, a little outside the landing-place, there is a shoal-patch in $3\frac{1}{2}$ fathoms, at a small distance from the edge of the shore reef, which is avoided by keeping close to the latter; or that patch may be passed on the north side, by keeping a *low* white house near the beach and the bushy tree nearly in a line with each other, when steering in for the landing-place. This is protected from the sea by a rocky ledge fronting it at the distance of 150 yards; boats pass round the eastern point of this ledge, and then haul in to the southward for the wharf.

Bullocks, poultry, fruits, and vegetables of various kinds, may be got here, and the country around has a pleasant appearance. Variation of the compass, 1° 31′ East in 1782. Supplies.

RAT ISLAND, in lat. 3° 51′ S., bearing S.W. by W. from Fort Marlborough, distant about 6 miles, is surrounded by an extensive coral reef, partly dry at low water; which projects $1\frac{1}{4}$ miles to the N.W. of the island, and to the southward of it about three-quarters of a mile. The island is low and small, having on it a few palmira trees, and some godowns, or houses for receiving pepper, with a small battery of guns for its protection. To the northward of the island, there is an excellent gut or basin in the N. E. side of the reef, with depths of 5, 6, and 7 fathoms in it, and 3 or $2\frac{1}{2}$ fathoms at its upper end. Ships requiring repair, or having a cargo to receive or deliver at Fort Marlborough, generally go into this basin, where they moor head and stern to anchors laid upon the bank on each side, or nearly in a N.W. and S. E. line, directly across the basin. Rat Island. The basin.

The passage into the basin is close to the edge of the reef on the west side of the entrance, for several detached rocky patches bound the east side, with 7 and 8 fathoms water close to them.

The bottom in the basin is soft mud and sand, and the coral bank on each side being a soft perpendicular wall, no injury is sustained if, during the strong N.W. gales, a ship part her mooring junk or cable and is driven against the S. E. side. Ships proceeding to the basin generally anchor at the entrance, and warp into it; from this place, goods

may be conveyed to or from Fort Marlborough, with the same facility as from the road, the boats being able to make a trip daily with the land and sea breezes. Here a ship is completely sheltered from the sea by the reef; whereas, it oftens runs so high in the road, that goods are unsafe in the boats alongside, and they are frequently forced to run for shelter into Poolo Bay, the North-westers sometimes giving very short warning of their approach.

Poolo Bay.

POOLO BAY, about 3 leagues to the southward of Fort Marlborough, is an excellent harbour, secured from the sea by a neck of land on the north and west sides, which is usually called Poolo Point; that part fronting the sea is called the west point; and the eastern extremity, the east point; the latter is low and sandy, and forms the north side of the bay. When ships at anchor in the road are unable to ride during strong N. Westers, they slip their cables if it is day-light, and run for Poolo Bay. In doing so, they should steer South and S. by E., taking care not to come under 12 fathoms until past the Black Rock, and *False* Black Rock, as they may not be always discernible in blowing weather, when the sea breaks much in the channel. They lie about half-way between the road and Poolo Point, or 4 miles from the latter, and if the low sandy point of the bay is not brought to the southward of S. E., they will be avoided. When clear of the Black Rocks, a ship should haul to the eastward for Sillebar on the east side the bay, and the depth will decrease gradually to 8 fathoms as the low sandy point that forms the opposite side is approached; this at low water may be rounded very close, and when it is high water, at the distance of a cable's length; she must then haul up under the south side of it, and anchor in 7 fathoms with the extremity bearing about North, distant from the company's pepper godown a little more than a quarter of a mile. Near the shore, the south side of the bay is shoal and rocky, and it would be imprudent to run too far into the western angle of it, where there is a 4 feet rocky shoal, the only one in the bay.

Directions. Anchorage.

Directions on the loss of anchors.

If a ship happen to lose all her anchors, she ought to haul close round the point, and when well inside of it, she may run on shore in the mud without fear, opposite the nearest tree, having previously prepared the boat with a hawser to make fast to it.

Sillebar River's entrance, to the N.W. of the bay, has 4 feet water on the bar; from whence it stretches both northward and southward, near, and parallel to the shore, the southern branch leading to a great lake contiguous to the sea, to the S. Eastward of Poolo Bay. The tide rises from $3\frac{1}{2}$ to 5 feet in the springs, high water about 6 hours on full and change of moon. The bay, being surrounded with low swampy ground, is considered to be very unhealthy, and the water also of a pernicious quality;* it is, therefore, little frequented by ships.

Tides. Bay unhealthy.

Unsafe to run for in the night.

Ships driven from their anchorage in the night cannot run for Poolo Bay without the risk of getting on the outer low sandy point, for it will not be visible, nor do the soundings answer as a proper guide, there being 8 and $8\frac{1}{2}$ fathoms very close to it, and nearly the same depths in a direct line from it to the N. N. Westward; it therefore seems advisable, if a ship cannot ride during the night, to run out to sea, betwixt Rat Island and the Asia Shoal.

* The Royal Bishop moored in Rat Island Basin, in 1784, having her mizen-mast sprung; sent the long boat with an officer and 19 men to Poolo Bay, for the mast of the Myrtle transport, that ship having been condemned there, on her passage from Bengal to England. They had provisions and 3 butts of good water, and were cautioned not to drink the water of Poolo Bay; notwithstanding, many of them whilst on shore drank of it, rather than take the trouble of going to the boat, which proved of fatal consequence to many of them; for the officer was confined to his bed during the passage home, and the boatswain, one quarter-master, and 8 men, died during that passage. Poolo Bay is thought to be most unhealthy during the southerly monsoon.

THE DANGERS contiguous to this place, exclusive of the rock off Songy Lamo Point, and the north and south breakers off Fort Marlborough Point, already mentioned, are the following.

Middle Shoal, with $4\frac{3}{4}$ fathoms rocks on it, situated nearly mid-way between the south breaker and Black Rock, is on with the Sugar Loaf bearing about N. E. $\frac{1}{2}$ N.; close to it on the outside there are 9 and 10 fathoms, and $8\frac{1}{2}$ fathoms inside. Middle Shoal.

Carrang Lampooyang, or Black Rock, about $1\frac{1}{2}$ miles to the S. E. of the former, and nearly South from Marlborough $3\frac{1}{2}$ or 4 miles, is generally discernible by the sea breaking on it; inside of it the depths are 8 and 9 fathoms, and the same outside in a small channel betwixt it and the False Black Rock, which lies about half a mile West from the other, with $3\frac{3}{4}$ fathoms water on it. This danger is on with the Sugar Loaf bearing N. E. by N., and in one with the flagstaff on the steeple bearing from North to N. $\frac{1}{2}$ E. These shoals are avoided on the outside by keeping in above 11 fathoms; and by keeping in about 8 fathoms, or rather less, a small vessel may occasionally pass inside of them. Black Rock, and False Black Rock.

Carrang Byang Byang and Carrang Ikan Tandoo are two rocky shoals together, with 5 and 6 fathoms water on them, bearing from Rat Island between West and W. N.W., distant 2 or $2\frac{1}{2}$ miles; betwixt them and the reef surrounding the island there is a passage nearly a mile wide, with 16 and 17 fathoms water. To avoid these shoals, Rat Island, when it bears from East to E. S. E., should not be approached nearer than 3 miles; and as the Sugar Loaf bears from them N. E. $\frac{1}{2}$ E., it should be kept to the eastward of that bearing, in coming from seaward, until Rat Island bears S. E. In working to or from the road by the northern channel, which is spacious and safe, a ship may stand near the edge of Rat Island Reef on the southward tack, and to 10 fathoms towards Songy Lamo Rock and the main. Carrang Byang Byang, and other shoals.

There are two small shoals, called Carrang Ikan Chaby, with $4\frac{1}{2}$ and 5 fathoms rocks on them, distant about a mile E. N. E. from Rat Island, having a narrow channel with 10 and 12 fathoms betwixt them and Rat Island Reef; a vessel, to pass through it, must keep within less than 150 fathoms of the Island Reef, or a full mile off Rat Island Reef, to pass outside of these shoals.

CARRANG LEBAR, or ASIA SHOAL, extends East and West $1\frac{1}{2}$ miles, and is about a mile in breadth; although 4 fathoms is the least water that has been found on it, the bottom being coral and sand, there is a heavy ground swell on it, which sometimes breaks in bad weather; it ought therefore to be carefully avoided, more particularly as it lies much in the way of ships approaching the road from the southward, and there may probably be less water on some spots than 4 fathoms. From Rat Island, the east end of the shoal bears S. S. E., and the west or outer part S. by E., distant 5 miles; and from the west point of Poolo Bay, the nearest part of the shoal bears about W. by S. $\frac{1}{2}$ S., distant 3 miles. The Sugar Loaf bears from the east end of it N. N. E. easterly, and from the west end N. E. by N. northerly. Carrang Lebar, or Asia Shoal.

To approach the road or Rat Island by the outside channel, between the island and shoal, a ship ought not to bring the island to the westward of N. $\frac{1}{2}$ W. until within 3 miles of it; then she may haul in for it and the road, or directly to the eastward, for Poolo Bay, if bound there. The depths between the shoal and Rat Island are from 22 to 17 fathoms, and in the other channel, betwixt it and the main, generally 17 and 18 fathoms. Coming from the southward through this channel, a ship must keep within 2 miles of the west point of Poolo Bay until it bears East, and may then steer for the island: the point may be approached within half or three-quarters of a mile To sail through the channels on either side of it.

occasionally in working, but a reef projects from it about a third of a mile, with 3 fathoms on its outer edge, and 13 or 14 fathoms close to.

To avoid the Asia Shoal fully on the west side, when going in or out by that channel, the island may, in passing the shoal, be kept bearing North. The approach to this shoal may be known by the overfalls towards the outer edges of it, if the lead is kept going.

FROM MARLBOROUGH TO FLAT POINT.

Buffalo Point, and thence to Flat Point.

BUFFALO POINT, in about lat. 3° 58′ S., a round bluff headland covered with trees, discernible from the Road of Fort Marlborough, is about $2\frac{1}{2}$ miles to the southward of the west point of Poolo Bay, and they are frequently considered as one and the same. From Buffalo Point the coast of Sumatra extends S. E. about 58 leagues to the west part of Flat Point, which is the south point of this large island, and forms the north side of the entrance of Sunda Strait. The whole of this extent of coast is generally bold and safe to approach, and the land mountainous a little in the country; soundings extend from the shore about Fort Marlborough and Poolo Bay, to the distance of 4 or 5 leagues, and from thence to Manna, regular soundings over a sandy bottom are found, where a ship may occasionally anchor in moderate depths, if it fall calm and the current be unfavourable: but farther to the southward the coast becomes more steep, soundings extending out only a short distance, until Little Fortune Island, near Flat Point, is approached, where they are got nearly 2 leagues from the main.

Manna Point.

MANNA POINT, in lat. 4° 33′ S., bearing nearly S. E. from Buffalo Point, distant 17 leagues, may be known by a small hill with palmira trees on it, and by its being the next headland to Buffalo Point that projects considerably into the sea. Betwixt them there are several small places; Moreallam, about 4 or 5 leagues from Buffalo Point; Saloomale, about 2 leagues farther; Pring, in lat. 4° 21′ S., distant 11 leagues from Buffalo Point; Alass, 2 leagues more to the S. E.; and Penoo, near Manna. The coast in this space may be approached to 15 or 20 fathoms, and in some parts to 11 or 12 fathoms; but from 18 to 35 fathoms, are good depths to preserve in sailing along.

About 4 miles to the S. Eastward of Buffalo Point there is a narrow spit, with 7 fathoms rocks on it, 15 fathoms close to on the outside, and 12 fathoms soft ground between it and the shore, from which it is distant about 2 miles. The spit extends parallel to the shore about a quarter of a mile, opposite a low point of land, and the least water found on it has been 7 fathoms.

Anchorage at Pring.

At Pring, the Company's ships used sometimes to anchor to receive pepper; the best anchorage is in 12 fathoms, muddy bottom; for farther in the ground is foul and rocky on the edge of a shoal, projecting about 2 or 3 miles off shore. With the Resident's house bearing N. E. by E. $\frac{1}{4}$ E., distant about 3 miles, the Kent shoaled at once from 9 to 7 fathoms, and anchored during a strong gale, where she had the best

bower cable cut to pieces in one night: about three-quarters of a mile from the ship, the boat had 7 fathoms, very rocky, and farther in, found the water shoal suddenly, the sea breaking there when blowing fresh.

Manna Town is near the point of that name; the Company's ships used to touch, to take in pepper from thence and Penoo, and usually anchored in 10 or 12 fathoms. The Europa, at anchor, taking in pepper at Penoo, had the house at Penoo bearing N. ½ E., and Manna E. by N. A small cascade falls perpendicularly from the steep cliffs which line the shore near Manna, to which the Elgin, East India ship, dispatched a boat for water; but the boat was lost, and the crew perished in the tremendous surf that generally prevails along this coast. Manna Town.

Manna Point may be rounded in 14 fathoms, but not nearer, as a reef is said to project from it about a mile; to the southward of the point there are 12 and 14 fathoms about 1½ miles from it; but no ground 50 fathoms at the distance of 2½ or 3 miles, for the coast to the S. Eastward becomes more steep. About 5 leagues S. E. from Manna there is a place called Pethang, or Padang.

CAWOOR, in lat. 4° 56′ S., distant about 11 or 12 leagues to the S. E. of Manna, is situated near the south part of a concavity in the land about 5 miles in length, where, in the small bay of Cawoor, ships are sheltered from southerly winds; and in Sambat Bay, which forms the north part of the concavity, there is good shelter from N.W. and westerly winds in 9 or 10 fathoms, sand and muddy bottom. From Sambat River on the east side, to Secooniet, or Bandar Point, that forms the western extremity, this bay is about 2½ miles wide, having the village Bandar at the N.W. side, where is a small river, and level country. Cawoor, and the adjacent coast.

From the anchorage in the bay, Mount Poogong may be seen over the other land bearing E. S. E.

The anchorage at Cawoor is in 11 or 12 fathoms, with the Resident's house bearing about E. N. E., distant 1 mile, the south point of the bay S. by E. or S. ¾ E., 1½ miles, and the western extreme of the land W. N. W., about 3½ miles.

The passage for boats going to the factory is betwixt two coral banks, and very narrow, with breakers on each side; about 100 yards to the westward of the factory there is a small black rock on the western bank, which must be kept very near on the larboard hand. Steering out from the anchorage to the westward, the depth increases regularly, but rather suddenly, from 14 fathoms in the road to 42 fathoms, sand and shells, a little way outside the bay. About half a mile from the shore, outside the south point, there are 40 fathoms water, and 20 fathoms close to the breakers.

PULO PISANG, in lat. 5° 8′ S., lon. 104° 6½′ E., by Captain William Owen's observations, bears from the south point of Cawoor Bay about S. E. by E., distant 8 leagues; the coast between them is steep, there being no soundings except very close in. Point Poogong, about 3 leagues from Pulo Pisang, projects a little into the sea; and Mount Poogong, in lat. 5° 4′* S., is a high remarkable mountain near the sea, which bears nearly North from the same island, and may be discerned a great way from the offing. Pulo Pisang is of round form, about a mile in diameter, consisting chiefly of a bed of rock crystal, and on the east side, between it and the main, there is good anchorage and shelter from N.W. and Westerly winds, in 12 or 15 fathoms. The Revenge moored in 16 fathoms with the island bearing from S.W. ½ S. to Pulo Pisang. Anchorage.

* Captain Ashmore, in 1827, made it in lat. 5° 0′ S., and 2° 57′ 38″ West from Batavia.

W. N.W., Sillaloo Rock at Crooe S. E. ½ E., extremes of Sumatra from S. S. E. to W. N. W. ½ N., and the rocks about 50 yards off the S. E. part of the island S.W. by S. southerly, distant from the island three cables' lengths, and from the main three-quarters of a mile.

Shoals. To the northward of the island, about half-way between it and the main, there is a reef of rocks, on which the sea generally breaks, having 12 and 16 fathoms on the south side, 20 fathoms on the west side, 12 fathoms foul ground to the northward; and about North or N. by W. from the reef there is a patch of coral rock, with 2 fathoms on it, seeming to preclude any safe passage for large ships betwixt the reef and Sumatra shore. Between the N.W. end of the island and reef, the depths are from 10 to 18 fathoms; but to the eastward of the latter the water is shoal, with foul ground, generally from 4 or 4½ to 3 fathoms on the visible patches of coral rock. This shoal water and foul ground extends from the north part of the island in a N. N. Easterly direction towards the main, so that it would be imprudent for a ship drawing much water to endeavour to pass between the island and the Sumatra shore; but a small ship, by keeping about two cables' lengths from the island, may come in from the northward, or pass out that way. Wood and water may be got on the main to the N. E. of the island, and the soundings are regular in the road, from the east side of the island close to the shore of Sumatra. A reef lines the outside of the island, stretching to a small distance, from which the depth increases quickly in standing to the southward, there being 36 and 40 fathoms about a quarter of a mile off.

Crooe and the adjoining coast. CROOE, in lat. 5° 15′ S., about 7 miles S. E. by E. from Pulo Pisang, is situated at the bottom of the bay, on the bank of a small river, navigable by small boats at high water, close to the northward of Sillaloo Rock. All round the bay, from abreast of Pulo Pisang to Crooe, soundings of 35 fathoms are got about a quarter of a mile from the shore, and they extend farther out from the latter place: but care is required, if working into Crooe Road, to avoid a dangerous rocky shoal, discovered by Mr. M'Kellar, of his Majesty's ship Belliqueux, which ship touched here, and procured good water, bullocks, buffaloes, and other refreshments.

Dangerous Shoal. This shoal bears about N. ¼ W. from Sillaloo Rock 1¼ miles, from a remarkable tree near the shore, at the bottom of the bay it bears S.W., and is about half a mile distant from the nearest shore, and from the anchorage of Crooe about N. by W. three-quarters of a mile. There is 1½ fathoms water upon this rocky shoal, 14 and 15 fathoms inside of it, and 18 or 20 fathoms to the southward, between it and the anchorage of Crooe.

Sillaloo Rock appears like an island when seen at a distance; foul ground projects from it about 2 cables' lengths into 10 fathoms, from thence sandy bottom to 54 fathoms about three-quarters of a mile off shore. The anchorage is safe in the S. E. monsoon, being well sheltered from these winds by Carrang Pingan, the point that forms the south side of the bay, off which there are no soundings about 2 cables' lengths from the breakers, and 40 fathoms close to.

Bencoonat. BENCOONAT, in lat. 5° 35′ S., bearing about S. E. from Pulo Pisang, 8 or 9 leagues, is a small town or village, subject to Crooe, on the north side of a low point, having on it palmira trees: the bay here is interspersed with rocks, which stretch out nearly a league from the point, but there is a passage for boats or very small vessels close along the shore. Siggen Point, about 3 leagues to the N.W., forming the western extremity of the bay, has a reef projecting from it about a mile or more, with

20 fathoms close to; and between Crooe Bay and that of Bencoonat, soundings extend a little way from the land. The coast hereabout, and farther to the southward, is generally low fronting the sea, but inland the country is mountainous. A ship intending to touch at Bencoonat should anchor well out, to avoid the rocky ground.

Little Fortune Island.

LITTLE FORTUNE ISLAND, called by the natives PULO BATOA *KETCHELL*, in lat. 5° 54′ S., distant about 4 miles from the main, bears nearly S. E. by S. from Bencoonat 8 leagues; it is low and woody, and about a mile in diameter. Along the coast between them, soundings are found 3 or 4 miles from the shore; and in the vicinity of the island the bank becomes more regular, and extends farther out, having soundings on it from 2 to 3 leagues off the main. About 4 leagues to the northward of Little Fortune Island, a low point of land forms the northern extreme of a bay, where there is a village. When that point bears North-easterly, the Sugar Loaf N. E. ¾ E., and the island S. E. ¼ S. 10 miles, there are 27 fathoms, sandy bottom, about 3 miles off shore. This island is surrounded by a reef, but there is good anchorage about a mile to the eastward of it in 8 or 9 fathoms, and a passage betwixt it and the main, with various depths, from 5 or 6 to 12 and 13 fathoms.

Anchorage.

Billimbing Bay.

There is also good anchorage in BILLIMBING BAY on the opposite shore, a little to the northward of the south end of Sumatra, where a ship may lie in 7 or 8 fathoms at the entrance of the bay, and small vessels may lie in 3 fathoms inside, sheltered from all winds. The small river Billimbing is on the east side of the bay, and there is fresh water at the S.W. side, inside the point that forms it, from which a reef projects to the northward about a quarter of a mile. Captain W. Owen, at anchor in this bay, in H. M. S. Baracouta, observed in lat. 5° 54′ S., Samanca Peak E. by N. ½ N., Billimbing Point S. E. ½ S., outer breaker of its reef S. S. E. ¼ E., Little Fortune Island W. ¼ S.

The soundings are a guide in passing outside the island in the night, and from thence round Flat Point, for they extend more than 2 leagues off shore; and the bank is flat round the island. If coasting with the land wind and favourable weather, you may borrow into 15 fathoms occasionally if the lead is kept going; in the Atlas, we borrowed into 12 fathoms, when passing Fortune Island and the land about Flat Point, during the night; but that seems too near, particularly in a large ship.

Bank of soundings.

The bank of soundings extends far south from Flat Point, otherwise there must be a *detached bank* at a great distance from it, on which soundings were obtained as follows:—

The Bridgewater, February 7th, 1816, observed at noon in lat. 6° 15′ S., the body of Keysers Island bearing N. 24° E., Low, or Flat Point, N. 17° E., southern extreme of Princes Island S. 47° E.; sounded, and had ground 54 fathoms.

The Atlas, February 7th, 1816, with the island Crockatoa bearing E. by N. ¾ N., and the low land about Flat Point on Sumatra N. by E.; at noon, had soundings of 50 fathoms, having steered 2 miles S.W. by W. from being in 28 fathoms at 11 A.M. About 5 leagues W. S.W. from Flat Point there is a coral bank of 30 fathoms placed in some Dutch charts.

Flat Point.

FLAT POINT, in lat. 6° 0′ S., lon. 104° 40′ E., distant about 3 leagues to the S. Eastward of Little Fortune Island, is the S. Westernmost extremity of Sumatra, bounding the entrance of Sunda Strait on the north side; and the narrow neck of land by which it is formed separates the deep inlet called Keysers Bay, on the east side, from Billimbing Bay and Fortune Island on the opposite side. The south part

of this neck of land is low and woody, extending 3 leagues nearly East and West, the east end of it bounding the entrance of Keysers Bay, and called Tanjong Chinna, by others called Flat Point; but the west end of this low land is here considered as Flat Point, and lies about 30 miles to the westward of Java Head. The ship Speke, in 1793, anchored on the east side of this low land in 17 fathoms, sand, about three-quarters of a mile from the shore, where she filled up her water, and was sheltered from North-westers.

PASSAGES AND CHANNELS.

Channels or routes parallel to the coast.

THE CHANNELS, or ROUTES, along the west coast of Sumatra, may be considered as three in number. That to the westward of all the islands in the open sea, recommended as the best at all times, called the OUTER PASSAGE; the space between the chain of large islands in the offing, and those smaller islands contiguous to, and interspersed along the coast, which may be called the MIDDLE PASSAGE, and which is generally from 4 to 10 leagues distant from the shore of Sumatra, and is connected with the Inner Passage in some places; and the INNER PASSAGE, close along the coast and betwixt some of the islands near it.

The passage outside the islands preferable.

The Outer Passage, to the westward of all the islands, in the open sea, is the best of the three; for there, S.W. and Southerly winds often prevail, when N.W. squalls and variable baffling winds may be experienced close to the land.

The middle route should not be followed when bound to the northward, nor at any time, if it can be avoided without inconvenience, for although it is wide, with few dangers, and may be adopted by night or day, when the weather is clear and favourable, ships are liable to be drifted about by currents when the winds are faint and baffling, there being no anchorage; and in some parts towards the main, dangerous coral shoals, from 1 to 2 and 3 fathoms under the surface, shoot up from deep water at the edge of soundings.

Dangerous shoals.

The Inner Passage has been generally recommended to navigators, but it certainly ought not; probably no ship should adopt it, unless when trading at different places on the coast, and it should seldom be chosen by ships bound to the northward in either monsoon, but having in many places moderate depths for anchoring occasionally, it is preferable in that respect to the Middle one; on account, however, of the numerous small islands, and many dangerous shoals, the true positions of which are not correctly determined, it is, to persons unacquainted, an intricate and embarrassing passage. Ships proceeding by it are generally obliged to anchor during the night.

It has been said, that all the shoals on this coast are *white* coral rocks, discernible from the mast-head a mile off in the day-time, even when they are 3 fathoms under water. On the contrary, many of the shoals consist of *black* rocks, not discernible until close to them, although covered only with 8 or 10 feet water: and several ships have grounded upon these shoals in the day-time, before they could be perceived. A good look-out from the mast-head is nevertheless useful, particularly when the sun shines, for many of the dangers will then be discernible before they are approached very close.

To approach the coast from seaward.

Ships bound to parts of the coast situated betwixt Bencoolen and Tappanooly may, in coming from sea, pass through some of the channels formed by the principal islands in the offing, adopting a safe and convenient one, according to the season and prevailing winds: an account of these channels will be found in one of the following sections, where the islands are described. Ships bound to the northern part of the coast, any-

where betwixt Tappanooly and Achen Head, should pass to the northward of Hog Island, and make the land near to their port; but when northerly winds prevail, they ought to keep well to windward, and after making the land, coast along at a moderate distance to the place to which they are bound.

The Arniston, bound to China by Malacca Strait, left Bencoolen, June 25th, 1802, stood directly to the westward into the open sea, where she got brisk southerly winds, which enabled her to pass Pulo Rondo, July 8th. Had she proceeded close along the coast, her passage might have been greatly prolonged, as happened to the ships mentioned above.

In the King George we were from the 26th of July to the 11th of August, 1791, getting from Pulo Rondo to the equator, when bound to Bombay by the Southern Passage; the winds in the open sea to the westward of the islands being then constantly between S.W. and South.

MONSOONS.

THE WINDS on the west coast of Sumatra are denominated the South-East and North-West Monsoons, agreeably to the direction in which the periodical winds are found to blow in south latitude; but they are subject to great irregularities on this coast, on account of the numerous islands in its vicinity; and the two extremities of the island being far distant on different sides of the equator, the same winds cannot be expected at all times to prevail along the whole of the coast. Whilst the north part of the coast enjoys fine weather from October to April, N.W. winds with rain and squally weather prevail on the south part; and in the opposite season, when the S.E. monsoon is blowing on the south part of the coast, the N.W. monsoon prevails, with squalls and rain, close to the coast in North latitude; but outside the islands, in the open sea, the wind is then generally between South and S.W. Monsoons.

THE S. E. MONSOON, or dry season, generally begins in May and continues till October. In this season, when the southerly winds blow more steadily and with greater force than usual, which is from June until late in September, there are no land breezes; at other times, brisk sea breezes prevail from S.W. and southward in the day, and variable breezes from the land or from the northward in the night. Ships coming from the sea in this monsoon should, if bound to Bencoolen, or any other place well to the southward of the equator, endeavour not to fall in with the coast to the northward of their port, for several days may be lost in reaching it when the southerly winds prevail. The Herculean, bound to Bencoolen, fell in with the Poggy Islands, so late as the 18th of September, 1803, and was seven days getting to her destination, the winds being constantly from S. Eastward. S.E. monsoon. To approach the coast in that season.

Although the S. E. or southerly monsoon prevails most on this coast to the southward of the equator, *North-westers* are liable to blow for a few days at times, particularly about the full or change of the moon.* These North-westers are more common in North latitude, with southerly currents and frequent calms, rendering the navigation by the Inner Passage close along the coast very tedious and troublesome; more particularly as ships are in many places obliged to anchor in the night on account of sur- North-westers.

* The North-westers sometimes blow strong between Bencoolen and the entrance of Sunda Strait in December and January. The Rochester and King William were obliged to ride three days with top-masts struck, from the 15th to the 18th of January, 1717, during a violent North-wester, about 14 leagues to the southward of Bencoolen.

sounding dangers; also in the day, by the prevalence of faint breezes, calms, and contrary currents.

The Royal George, bound to Malacca Strait and China, left Padang July 1st, 1803, and proceeded along the coast by the Inner Passage; she made very slow progress; N.W. winds and southerly currents made frequent anchoring so indispensible, that it was the 12th before she reached the equator, and the 6th of August when she got to Achen Head.

The frigate Bombay, and Lady Castlereagh in company, in 1804, were all July and part of August getting from Bencoolen along the coast to the northward by the Inner Passage; and the latter ship struck on one of the rocky shoals about 10 miles off shore, in lat. 3° 4′ N.

N.W. monsoon.

THE N.W. MONSOON, on the west coast of Sumatra, particularly in South latitude, prevails from October to April; in some seasons N.W. winds begin early in October, but from this month to the middle of January they usually are strongest, attended often by much thunder, lightning, and rain. In March the hard rains abate, and the weather becomes more favourable. When the land and sea breezes prevail on this coast, which may happen at times in either monsoon, the sea breeze sets in between 10 A.M. and noon, subsequent to a calm, and declines with the setting sun. The land breeze begins early in the night, and continues until 8 or 9 o'clock in the morning, subject to many irregularities. To the southward of the equator, unsettled land winds, squally weather and rain, prevail greatly in the night during the N.W. monsoon; with sea breezes at N.W., W.N.W., or West, in the day, veering to W.S.W. and S.W. about the middle of March, or early in April.

Land and sea breezes.

In most parts of India to the northward of the equator the N.E. monsoon prevails when the sun is in the southern hemisphere, but on the west coast of Sumatra it is changed to a N.W. monsoon by the direction of the land. From December to April the weather is often settled and fine in North latitude, with land and sea breezes; at other times, particularly in the springs, North-westers prevail, which blow stronger than any other winds upon this coast. They generally produce a considerable sea, rendering it hazardous to ride at anchor in any of the open roads on the coast; and it is very difficult to work to the northward whilst they continue.

Passage of the Alfred.

The Alfred, bound to Prince of Wales Island and China, left Bencoolen, October 22nd, 1807; having a southerly wind at the time, Captain Welsted steered to the northward, intending to pass out into the open sea between the north end of Se Beroo and Pulo Mintao. The wind shifted to N. Westward, with frequent hard squalls, much rain, intervening calms, and southerly currents; with this unfavourable weather, very little progress was made to the northward, and many of the people being disabled from duty by the heavy rains, they were obliged on the 29th, after seven days' loss of time, to bear away, and pass out, round the southern limits of the islands, opposite Bencoolen.

Outside passage preferable.

It seems advisable at all times for large ships, bound from Bencoolen to Malacca Strait, to steer to the westward far outside of all the islands, where, in both monsoons, they will certainly get much quicker to the northward by keeping in the open sea than by following any of the routes inside the islands.

CURRENTS.

Current.

THE CURRENT on the west coast of Sumatra is influenced greatly by the winds, and seldom runs to the northward, in either monsoon, except when the wind is blow-

ing strong from southward, which will happen at times, particularly in South latitude. When North-westers prevail, the current runs with the wind to the S. Eastward, and it generally sets in this direction along the coast in both monsoons, particularly in North latitude. To the northward of the equator, when the current is setting to the southward betwixt the coast and the islands, it is frequently at the same time running to the northward, in the open sea, far outside of them. In October, November, and December, it is often tedious getting to the northward, particularly from the equator to Achen Head, for baffling N. W. winds and southerly currents are often found to extend a great way out from the coast in these months, particularly in the channels among the large islands in the offing, the current sets to the South and S. Westward; but in June and July, between Analaboo and Achen Head, the current has been found to set to the N. Westward from 20 to 30 miles per day.

To the southward of the equator, when at times the southerly winds blow with considerable strength from June to October, a drain of current is impelled to the northward, at which times it is rather tedious and difficult to work to the southward along the coast.

Tides.

The rise of tide on most parts of the coast does not exceed 2 or 3 feet in the springs; and in places not far distant from the equator it is high water about 6 hours at full and change, or when the moon is in the horizon. There is generally a considerable surf on most parts of the coast, which is highest in the southerly monsoon, during the spring tides.

CHAIN OF ISLANDS FRONTING THE WEST COAST OF SUMATRA.

Bale of Cotton Rock.

THE BALE OF COTTON ROCK, long dreaded by navigators, having been searched for by several of the Company's surveying vessels without success, its non-existence seems now certain. The locality formerly assigned to it was lat. 5° 23′ N., lon. 87° 54′ E.

Cocos Islands.

THE COCOS, in lat. 3° 6′ N., about lon. 95° 30′ E.,* bearing N.W., distant about 6 leagues from the N.W. end of Hog Island, are two small, low islands, covered with trees, separated from each other by a channel $1\frac{1}{2}$ or 2 miles wide, probably not safe, as breakers project a little way from the islands, with islets or rocks close to the northernmost.

Channel between them and Hog Island unsafe.

The channel between the north end of Hog Island and the Cocos should be approached with great caution in a large ship, as a shoal bank is described in the journal of the ship Jane to extend about 4 leagues in a S. S. E. direction from the largest

* The longitude of these isles and Hog Island is not correctly ascertained, the observations of navigators differing greatly in their geographical position. Captain Endicott places the Cocos (the northern island) in lat. 3° 1′ N., about 25 miles W. $\frac{1}{2}$ N. from the N.W. point of Hog Island, which position he gives after "repeated observations in passing them many times."

Coco Island, on which, steering to the N. E., she shoaled suddenly to 7 and 6½ fathoms. At sun-set June 13th, 1812, Cocos Islands bore N. ¾ W., and the N.W. point of Hog Island East, when rocks were observed under the bottom, had 6⅝ fathoms, hard sand, then 6½ fathoms: wore, and stood to the southward, increasing the depth regularly from 6½ to 8, 10, 12, 14, 20, and to 28 fathoms, sand and small black stones.

The following extract from the Greyhound packet's journal also shews that the above-mentioned channel is dangerous, unless a ship borrow towards Hog Island.

February 24th, 1783, at 1 P.M., saw breakers bearing E. S. E. ½ S., and, to appearance, broken or shoal water from these breakers to the Cocos, which then bore N. E. by N., and the north end of Hog Island East. Approached within 1½ miles of the breakers, which are dangerous, and if a ship stand in to the eastward between Hog Island and the Cocos, she ought never to bring the southernmost Coco to the northward of N. E. unless her distance from it is above 4 leagues.

Although ripplings, occasioned by currents or tides among these islands, sometimes resemble breakers, and are liable to deceive navigators; yet it appears by the above description, taken from the journals of these two ships, that the channel between the north end of Hog Island and the Cocos should not be used until better explored.

Hog Island.

HOG ISLAND, the northernmost of the large islands fronting the west coast of Sumatra, distant from it 17 or 18 leagues, extends nearly N.W. by W. and S.E. by E. about 16 leagues, the north point in lat. 2° 50′ N., about lon. 95° 40′ E.,* the south end in lat. 2° 21′ N., and is about 3 to 4 leagues broad, high, hilly, covered with trees, and may be seen 9 or 10 leagues; several islets lie near the shore on both sides, and 3 or 4 leagues from the south point, in lat. 2° 10′ N., lie the two Flat Islands, betwixt which and the south end of Hog Island there is a good passsage, about 3½ or 4 leagues wide, having no soundings at 70 fathoms, within 2 miles of the northernmost Flat Island, but the ship Baring found 26 fathoms in mid-channel. The water in general is deep near these islands, but with the north part of the northern island bearing W. ½ S., 1½ or 2 miles' distance, Captain Endicott, in the ship Suffolk, in 1823, passed over part of a coral shoal; "the rocks," he says, "were plainly seen under the ship's bottom," but the hurry of tacking prevented him from sounding till about, when there were 11 to 15 fathoms; but it was his opinion that there could not have been more than 4 or 5 fathoms, and farther towards the islands the water appears still more shoal.

On both sides of Hog Island there are sudden overfalls on several coral patches that lie 1 or 2 leagues off shore. On one of these, which bears about South from the S. W. point, there are very irregular soundings, from 30 and 20 to 7 fathoms, or probably less, water: about 2½ miles outside one of the islets that fronts the east end of the island there is a 2 fathoms coral shoal, with 90 fathoms, no ground, close to it. As there is no inducement for a ship to stop at this island, nor any safe anchorage about it known to navigators, they seldom or never land there, although it is probable there may be a harbour within some of the islets that line its eastern side. About 4 or 5 miles to the westward of the north point of the island, and 2 miles from two islets off that part, lies a coral shoal, with 4 or 5 fathoms, or perhaps less, water.

* His Majesty's ship Pandora made the N. W. point in lat. 2° 50′ N., lon. 95° 32′ E., and two small low isles near it in lat. 2° 56′ N., lon. 95° 27′ E. Captain Heywood's observations made the north-west end of Hog Island in lon. 95° 32′ E.; but these observations probably place it too far to the westward. By Captain Endicott's chart, the north point of Hog Island is in lat. 2° 58′ N.

Captain Lamb, in the Baring, experienced strong N.W. winds and southerly currents late in December, 1815, which prevented him from gaining ground to the northward, on the west side of Hog Island; but after passing round its southern extremity he got the wind favourable for proceeding to the northward, and found no southerly current in coasting along the eastern side of the island.

PULO BANIAK, or BANIA,* distant 10 or 11 leagues E. S. Eastward from the south end of Hog Island, consist of two principal islands a little separated, one lying to the N. Eastward of the other, with several small ones contiguous to them. From the S. E. side of the easternmost, or large island, a chain of islets and some shoals project considerably; but by keeping near the Baniaks, there is a safe channel between them and Passage Island, which is the easternmost of the chain, already mentioned in the section where Passage Island is described. At the north end of Baniak there is a bay, in lat. 2° 18′ N., with coral shoals and a group of islands fronting it; there is a passage into it betwixt the two westernmost islands, and shelter inside, with 16 to 9 fathoms water; a ship may also anchor outside these islands, but the soundings are very irregular, and the bottom generally coral. The north end of Baniak and the adjoining islands that form this bay bear nearly East from the two Flat Islands off the south end of Hog Island, and there is a channel between them 8 leagues broad. On the northernmost Baniak Island there is a peaked hill like a sugar-loaf. The southern extremity of the S. Westernmost island is in lat. 2° 0′ N., and East from this extreme there is a passage betwixt the first and second islands that lie off the S. E. end of the N. Easternmost large island, with irregular soundings in it, corally bottom; and third island, which is round and high, of the same appearance as the second, lies to the southward of it 5 or 6 miles, and there are various depths in a safe passage betwixt them, generally from 36 to 28 and 19 fathoms, by keeping nearly in mid-channel. Ships coming from the N. Westward, if bound direct to Tappanooly with a fair wind, may steer for these islands, and pass to the southward of them, or between the two southernmost, then proceed to the eastward for Bird Island, leaving it on the starboard hand; having cleared the latter, and the shoal to the N.W. of it, a direct course may be steered for the north entrance of Tappanooly Bay. Some persons adopt the channel to the northward of Pulo Baniak, and from thence steer East, to go between Passage Island and the coast, as the channel between Pulo Baniak and Hog Island, and that between the former and the north end of Pulo Nyas, are equally safe: but the channel to the South of Pulo Nyas is considered the best when bound to Tappanooly, for which brief directions are given in the description of the bay of this name. Pulo Baniak and adjacent islets.

PULO NYAS, the largest of the islands off the west coast of Sumatra, extends nearly in a S. E. direction, from about lat. 1° 36′ N., lon. 96° 55′ E., to about lat. 0° 38′ N., lon. 97° 59′ E., and is 6 or 7 leagues in breadth. The northern extreme bears south from Pulo Baniak, about 9 or 10 leagues, and about 3 leagues to the N. N. E. of this extremity lies the small island Pulo Baby, with a 40 fathoms bank close to it on the south side, and a safe channel between it and the north end of Pulo Nyas. Many other small islands line the shores of the principal one, at different places, some of which, particularly on the west side, stretch out about 3 leagues, also a shoal at the same distance from the N.W. part of the island. Although the coast is steep in some places, there is anchorage inside the group of small islands on the S.W. Pulo Nyas. Description.

* Pulo Bania, *i. e.* many islands

side, at the entrance of Seirombo River; also at a harbour close to the south point there is good anchorage in an excellent bay, where bullocks, buffaloes, goats, and poultry are plentiful, and water easily procured. The natives are not considered to be of so treacherous a character as the generality of Malays. There is anchorage inside the islands and shoals at the east point of the principal island, at the mouth of Nyas River: there are also other places where a ship might anchor occasionally, on the N. E. side, and betwixt the east and south points of the island. There is a fine river about S.S. E. from Pulo Baby, where a ship may anchor in 10 or 11 fathoms, about north from the river. In general the land is high, well clothed with trees, and partly cultivated by the natives for rice; this island was formerly well inhabited: the people are of small stature, and fairer than those of the adjacent coast, the women, more particularly, have always been in great demand at Batavia, and other Dutch settlements; therefore from 500 to 600 of the natives have been annually purchased here, and carried away in small vessels.

The Dragon brig, from Bengal, bound to New South Wales, touched at Seirombo for refreshments, in June, 1819, and Captain Murat, who was in that vessel, has communicated the following information relative to this place.

Captain Murat's account of Seirombo.

At anchor in $9\frac{1}{2}$ fathoms mud, with the mouth of the river bearing N. E. $\frac{1}{2}$ E., north-west point of the bay N.W. $\frac{1}{4}$ W., and isle in the middle of the bay, called Pulo Ache by the natives, E. by N. $\frac{1}{4}$ N. $1\frac{1}{2}$ miles, two pyramidal islands, one E. by S. $\frac{1}{4}$ S., and the other S. E. by E. $\frac{1}{4}$ E., the group of islands in the offing from S. by W. $\frac{1}{4}$ W., to W. $\frac{3}{4}$ S. As a heavy surf then rolled over Seirombo Bar, the Rajah of the islands in the offing came on board, when we weighed, made sail, and afterwards anchored in 17 fathoms mud and sand, with Silorongang village, S. $\frac{1}{4}$ E. 1 mile, extremes of ditto island from S.W. by W. $\frac{1}{2}$ W. to S. S.E. $\frac{1}{4}$ E., Noko Village, a famous place for hogs, N. $\frac{3}{4}$ W. 2 miles, extremes of Noko Island N. by E. $\frac{1}{4}$ E. to N.W. by W. $\frac{1}{2}$ W., Pulo Ache N. E. $\frac{1}{4}$ N. 5 miles, a small isle, the easternmost of the group, in one with the north-west point of Seirombo Bay N. N. E. $\frac{3}{4}$ E.

Silorongang village lies in a small bay faced with coral rocks, which renders the inside of them smooth for proas. When proceeding to the landing in a small boat, steer in shore from the northward, and pass between the coral rocks and the shore; but in a cutter or launch, steer for the breakers on the south side the bay, betwixt which and the reef to the northward, steer for the south end of the village, with a man at the bow of the boat to direct her, for many patches of coral rock lie under the surface of the water. To the southward of the village, fresh water is got from a small stream in the same bay.

Fresh water.

The group of islands fronting Seirombo Bay shelters it from the sea; but as some sand banks lie on the western side of the islands, it may be prudent to pass on the eastern side of them in coming from the northward, then sail into the bay. In approaching from the southward, the bay may be entered without difficulty, as the south channel is safe, between the south extreme of the group and Pulo Ache; but two shoals, which break at times, lie nearer to Pulo Ache than to the other side of the passage, which require caution in coming from the southward. To the northward of the N.W. point of Seirombo Bay lies a large shoal, for which a good look-out is requisite in coming from the northward, and 10 fathoms is a good track to round the point.

On the west side of Pulo Nyas, in lat. 1° 9′ N.,* is a group of four or five low islands,

* The charts shew no islands in this lat.; it is probable, therefore, that the group called Pulo Bunga, in lat. 1° 14′ N., is intended.

which have reefs extending a long way to the S. Westward of them, and it is probable there may be no safe passage inside of these.

The east coast has moderate depths, with good anchorage, and some fine rivers; especially one in lat. 0° 51′ N., where trade is carried on in proas: many isles line the coast here, as on the western side; but the sea being more smooth on the eastern coast, this part of Pulo Nyas is certainly the safest. According to Captain Pearce of the Frankland, who sailed along this coast in 1840, the island of Samsama lies in lat. 0° 53′ N., which is farther South than the position assigned to this island in the charts. Position of Samsama.

Captain Thornhill, in the David Scott, at 1 P. M., May 19th, 1825, sounded on a bank, not previously known, stretching out from Pulo Nyas, on which he had 18 fathoms sand and shells, with Pulo Nyas bearing from North to N.W. ½ W., distant from the nearest shore 10 or 12 miles: steering to the eastward with light northerly breezes, had the same soundings till 3 P. M., when the depth increased suddenly to 35 fathoms no ground. Bank of soundings.

Pulo Nyas bearing from E. N. E. to E. by S., 8 or 9 leagues' estimated distance, at 10 A.M., 31st October, 1812, Captain Bean, of the ship Lady Barlow, saw breakers from the poop, bearing E. N. E., distant only 2 miles. Steered S. S. E. 5 miles till noon, when the observed lat. was 0° 37′ N., lon. 96° 32′ E., by a good chronometer.

If this was a *real* danger, seen by Captain Bean, it lies much farther from Pulo Nyas than the situation hitherto assigned to any of the reefs fronting the west side of that island. It seems probable that the supposed danger here stated might be the effect of strong currents or tides, producing ripplings like breakers, but it will be proper to keep a good look-out in this situation.

CLAPPS ISLAND, called Clappers Island by the Dutch, lying on the equator, in about lon. 98° 7′ E., distant 10 or 11 leagues S. by E. from the south end of Pulo Nyas, and 7 or 8 leagues West from the N.W. end of Pulo Mintao, is low, covered with trees, and has some gaps in it, which give it the appearance of several small isles, when first seen above the horizon. On the 6th and 7th March, 1783, the Greyhound packet was near it, and describes a very dangerous ridge of breakers to extend along the island to the distance of 3 or 4 miles. Captain Forrest also saw it in the night, and called it a low flat island. The brig Olive Branch got near to it, September 26th, 1808, and states it to be a low island, with gaps in it: the wind then blowing very hard at N.W., she lost her main-mast, and was forced to bear away through the channel between Mintao and Se Beeroo, to refit at Padang. In February and March, the current sets strong out to the S.W. in the vicinity of these islands. Clapps Island.

PULO MINTAO, so named by the Portuguese, formerly called NANTIAN by the English, but the native name of which is said to be BATOA*, is the next large island to the south-eastward of Pulo Nyas, extending from lat. 0° 1′ S., lon. 98° 10′ E., in a southerly direction, to lat. 0° 41′ S., being about 14 leagues in length, and 5 or 6 in breadth. This, like the other large islands, is moderately elevated and hilly, covered with trees, and many small islands line its shores both on the east and west sides, with moderate depths among them, and some of them form safe bays or harbours, little known to Europeans. The N. E. point of the island is a bluff, with a reef projecting Mintao.

* Europeans generally apply this name to the island inside, between it and the coast of Sumatra.

a quarter of a mile from it, and a few miles to the southward, on the east side, is formed a bay, called Lams Bay by the Dutch, in about lat. 0° 5′ S., where the Greyhound packet lay several days in March, 1783, and procured a few poultry, pigs, and coconuts, at a dear rate, from some natives who came from the north part of the island; the water got in a creek on the Mintao shore was brackish.

The Greyhound, moored in 16 fathoms sand and shells, nearly in mid-channel between Mintao and the island that forms the east side of the bay, and had the extremes of Mintao bearing from N. 35° W. to S. 28° E.; the island forming the east side of the bay, off the N. E. end of which projects a long reef, dry at low water, from S. 36° E. to S. 80° E.; two other islands off the nearest shore half a mile, from N. 5° E. to N. 67° E. The mouth of an inlet also bore S. 64° W., which was found to be an arm of the sea, separating a low island, about 3 miles round, from Mintao; and the other mouth of the inlet is nearly opposite the south point of the island on the east side of the bay, distant from each other half a mile.

After leaving this bay, the Greyhound, in steering for the N. E. point of Mintao, found the deepest water by keeping from the Mintao shore, toward the small island on the east side of the channel, having never less than 9 fathoms, except one cast of 7 fathoms; and this is said to be the only channel into Lams Bay, there being no passage in to the southward.

The north part of the island does not extend above 11 or 12 miles East and West, forming a bay between the bluff point and another point about 3 miles West of it, which is foul on the east side nearly 2 cables' lengths from the shore, but the reef on the west side can be approached close. Two ships may be sheltered in this bay from southerly winds, but it is open to the northerly monsoon; and the Greyhound could not find any fresh water here, although this is the best place for refreshments, being inhabited, which is not the case at Lams Bay. The Greyhound anchored in 18 fathoms, sand, off the bluff point $1\frac{1}{2}$ miles, Mintao from S. E. $\frac{3}{4}$ S. to W. by S. $\frac{1}{4}$ S., the outer small isle W. by N. $\frac{1}{2}$ N., Pulo Penir from E. $\frac{3}{4}$ N., to N. E. $\frac{1}{2}$ N.

She weighed from hence March 26th, 1783, steered to the eastward for the bluff N.E. point of the island, and rounded the reef in 7 fathoms, at noon, within half a mile of the point observed lat. 0° 1′ N. At 3 P. M. anchored in 10 fathoms, good ground, about a quarter of a mile to the southward of the first small island inshore, to the southward of the point, and about 3 miles nearer to it than when in Lams Bay, extremes of Mintao from N. 32° W. to S. 31° E., Pulo Penir from N. 66° E. to the north end, shut in with a small island N. 20° E., the watering creek's mouth S. 19° W., distant half a mile. Here she moored, unbent sails, and lay upwards of a month, caulking the upperworks, &c., procured plenty of firewood and water in the creek, which is probably scarce in the dry season, as the boat was obliged to go 3 miles up the creek on spring tides to fill the water, which was then indifferent; and few supplies were obtained from the natives, although the chief of the island visited the ship, so that she was obliged to go to Natal for supplies.

Wood and water.

Padang boats are said to go annually to Mintao for dammer and oil.

The west coast of the island extends about North and South nearly 40 miles, fronted by a chain of about 18 or 20 isles, of various sizes, some of them several miles distant from the main island, dangerous to approach, being lined with reefs and high breakers, and no soundings near them. About a league from the south point of the main island, there is a small sloping island, situated in about lat. 0° 45′ S., said to have soundings of 30 or 40 fathoms between it and the point, with reefs to the S. E. and southward, between it and the N.W. end of Se Beroo.

PULO BATOA, called also Penir or Pingey, but Cassanie is said to be the name given to it by the natives, about 6 or 7 leagues to the north-eastward of the north end of Mintao, nearly mid-way between it and Natal, is of considerable extent, stretching nearly East and West, having some islets and shoals off its S. E. end, which have been already mentioned in the description of the coast of Sumatra, and a chain of islands and shoals extend from it over toward Mintao. The south end of Batao bears E. by N. from the N. E. point of Mintao. Pulo Batoa.

A ship coming from the westward, and bound to Natal, may proceed through the great channel formed between the south end of Pulo Nyas and these islands, leaving Mintao and Batoa to the southward. This channel is safe with a good look-out, but the prudent navigator will be cautious when near any of the islands during the night, as they are not yet sufficiently explored.

SE BEEROO, or NORTH PORA, called Great Fortune by the Dutch, extends nearly N. W. and S. E. about 23 leagues, the north point being in lat. 0° 56′ S., lon. 98° 38′ E., by lunar observations, and bears nearly S. E. from the south end of Pulo Mintao, distant about 8 or 9 leagues, which is the breadth of SE BEEROO CHANNEL, formed between these islands, but directly in the middle of it there is an extensive reef of breakers, which is in one with the small island off the south end of Pulo Mintao bearing N.W. and N.W. by N. This reef is very extensive, for the brig Olive Branch, in passing to the southward of it September 27th, 1808, saw breakers extend towards Mintao as far as they could be discerned from the mast-head, and the southern part of them seemed to be about mid-channel between Mintao and Se Beeroo. When the breakers bore E. by N. ¼ N., distant about 1 mile, she had no ground 70 fathoms; but after passing the reef, and bringing it to bear to the westward, she got on a rocky bank with overfalls from 15 to 20 fathoms, when the south part of Mintao bore N.W. by W. about 5 leagues, and the extremes of Se Beeroo from S. ½ W., to E.S.E.; steering from thence eastward, at a moderate distance from Se Beeroo, the depths increased to 25 and 30 fathoms, and shortly afterwards to no ground. The proper channel, from the reef to the north end of Se Beeroo, is about 4 leagues broad, having soundings from 15 to 26 fathoms in it, by keeping within 3 or 4 miles of Se Beeroo: a little to the westward of a direct line drawn from the west end of the reef to the N.W. part of that island, there are no soundings, nor any to the eastward of the north point of the island, at the distance of 3 miles from the shore. The N.W. point of Se Beeroo is in lat. 1° 0′ S., and 5 or 6 leagues to the westward of its north point, forming the entrance of the channel on the south side. Although little frequented, this appears to be a good channel, convenient for ships bound from the westward to Padang, being opposite to that place. When N.W. winds prevail, a ship steering for it ought to keep well to the northward, and make the south end of Pulo Mintao, then steer S. Eastward for the N.W. part of Se Beeroo, to give a berth to the reef between them; afterwards, she may keep within 3 or 4 miles of the northern side of the latter island, in steering to the eastward through the channel; a stranger, however, ought not to run through it in the night, unless in a case of necessity. This channel is now better known than formerly; the ship Elizabeth, Captain Wells, went through it February 3rd, 1755, and Captain G. Hayter, then second mate of that ship, made a plan of it. Captain Bennet has gone through it several times; Captain Owen also made a plan of this channel, in his passage through it in January, 1812, in his Majesty's ship Cornelia. The ship Hermes, of Calcutta, Captain Hall, was unfortunately wrecked on the reef south of Mintao, that bounds the north side of the chan- Se Beeroo. Channel between it and Mintao. Directions.

nel, a few years ago, by not keeping over towards the north end of Se Beeroo. The Cornelia got soundings of 27 fathoms, about 5 miles W. by N. from the N.W. point of Se Beeroo, and by keeping within 4 miles of the north coast of this island, she carried regular soundings of 20 and 19 fathoms through the channel, and the breakers on the mid-channel shoal were only seen from the mast-head.

Se Beeroo is generally high land, covered with wood, higher in the middle than towards the extremities, with a sandy beach in many parts, and a great surf breaking often upon the shore. On the N. E. side some small islands are said to lie a little way off; others are situated near the S.W. side and south point: betwixt these and the principal island there is a channel, with regular soundings from 16 to 20 fathoms, according to the description of the snow Jenny, which vessel, in January, 1769, went through it, between the small islands and Se Beeroo; and to pass through it, her directions are nearly as follows:—

Channel close to the S.W. part of Se Beeroo.

A ship intending to proceed for the Sumatra Coast, by the channel between Mintao and Se Beeroo, and having been forced to leeward of it by N.W. winds, may occasionally pass through the strait to the southward of the latter. Steer in for the west side of Se Beeroo, with the highest part of the land bearing about E. N. E., but not more to the northward until in 17 or 18 fathoms, white clay, which soundings will continue by keeping about mid-channel between it and the small islands that front its south-west end. Having run along until the third island, counting from the north-westward, is brought to bear about West, the north point of the strait will be seen to the eastward. A boat may be kept a-head in steering to the eastward, and the point on the south side of the strait will soon be discerned, known by two tall trees about half a cable's length from the other trees, standing on the extremity of the point among the rocks. The passage is clear until abreast this point, but in steering from it to the eastward, a good look-out from the mast-head is requisite, with a boat a-head sounding, for in this part of the passage there are many rocks on both sides, projecting from the islands that lie contiguous to the passage. The easternmost island, near Se Pora, may be approached close in passing, to avoid great overfalls and shoal soundings on the north side the strait, and a reef of breakers projecting from the south-easternmost island off Se Beeroo. When this reef is brought to bear N.W. by W., the depth will be 45 fathoms, and farther eastward, no ground.

On the S.W. side of Se Beeroo there are white cliffs a little to the northward of the north-westernmost island that forms the channel, and this island has breakers and foul ground stretching from it to the N.W. and westward.

S.W. point of Se Beeroo.

The S.W. point of Se Beeroo is in lat. 1° 47′ S., lon. 99° 2′ E., by Captain Torin's observations, agreeing nearly with others taken in the Walpole; and the southern extremity is about 3 leagues more to the eastward, and a little farther South.

Seaflower Channel.

SEAFLOWER CHANNEL, situated between the islands Se Beeroo and Se Pora, is a discovery made by Captain W. Owen, who passed through it in H. M. Brig Seaflower, November 10th, 1806, during the night. Being in lat. 2° 18′ S., lon. 99° 5′ E., at noon, with the appearance of a clear passage open to the north-eastward, between the islands Se Beeroo and Se Pora, he steered for it N. E. by E., and afterwards N. E. in passing through the channel, which he entered in the evening, and got clear of it about 10 P.M. This channel is bounded on the west side by an islet that lies near the S. E. point of Se Beeroo, and on the east side by the N.W. end of Se Pora, and an islet near the north end of the latter. These islets bear about E. ½ N. and W. ½ S. of each other, distant 12 or 13 miles, and when about half-way between

them in mid-channel at 8½ P.M., the Seaflower's place was lat. 2° 0′ S., lon. 99° 33′ E., or 1° 20½′ W. from Indrapour Point, by chronometer. The islet off Se Beeroo, that forms the west side of the channel, appeared to be in lat. 2° 1′ S., deduced from noon observation, and 1° 26′ W. from Indrapour Point. Captain Owen describes this channel to be 8 miles wide, clear of danger, and they got no soundings at 30 fathoms in passing through. Position

The Seaflower went through this channel again in 1808, steering about N. by E. ½ E., until clear of it to the eastward, and several ships have passed through it since that time.

These observations of Captain Owen make the south end of Se Beeroo about 11 or 12 miles to the southward of Captain Torin's observations.

The Seaflower Channel, described above, certainly cannot be that through which the Jenny passed, as the latter was found to be intricate and winding, not above a mile wide in some parts, with soundings of 16, 20, and 25 fathoms; whereas the Seaflower Channel is 8 miles wide, and apparently clear of danger. The Jenny, therefore, must have passed close to the S.W. and south end of Se Beeroo, within the islands which front this part of it, and form the N.W. and west sides of Seaflower Channel; otherwise, there must be a gut or strait through Se Beeroo, in about lat. 1° 45′ S., through which this vessel went, if her description be correct.

SE PORA, or SOUTH PORA, extends from about lat. 2° 0′ S. in a direction nearly S.E. to Point Marlborough, in lat. 2° 25′ S., lon. 99° 58′ E., which is the south point of the island, it being about 12 leagues in length, and nearly half that breadth at the north part, decreasing gradually to the southern extremity. It is mostly covered with wood, and rather less elevated than Se Beeroo; both these islands are distant about 17 leagues from the coast of Sumatra. A little eastward of the N.W. point of Se Pora, and directly South of the small islands which front the shore, is HURLOCK BAY, with soft ground in it, and moderate depths for anchorage; and there is a narrow channel leading from it to an inner bay or harbour, farther inland to the S.W. The outer bay being open to N. E. winds, the inner one must be preferred; and in passing through the narrow channel, the starboard shore should be approached more closely than the opposite side, which is rocky. This harbour is sheltered from all winds inside the point on the starboard side, where there is a red sandy beach, and anchorage in 8 to 10 fathoms, or in 5 or 6 fathoms, close to the shore; the depths in the narrow passage going in are from 4 to 6 or 7 fathoms. Captain Whiteway, who discovered this bay, makes the north coast of Se Pora extend East and E. S. Eastward from it about 3½ leagues to Cape Tilleroo, the north-east extreme of the island, with a small island, called Pulo Se Gere, adjoining to the coast, from which to the entrance of Hurlock Bay, a reef projects a great way out from the shore. Se Pora. Hurlock Bay.

The east coast of Se Pora extends from Cape Tilleroo S. S. E. about 10 leagues to Point Marlborough, and in this space, there are two considerable bays; Se Ooban Bay, about 3 leagues to the southward of Cape Tilleroo, and Se Labba Bay, 7 or 8 miles more to the southward.

Se Ooban Bay may be known by a large tuft of trees on the starboard side going in; the course into it is S.W., and a ship should keep in mid-channel, in from 24 to 30 fathoms, to avoid the rocks projecting from the points on each side the entrance. There is a brook of fresh water at the N.W. part of the bay, but the best anchorage is in the South part, with the point on the south side the entrance bearing about N. E., Se Ooban Bay.

in moderate depths from 8 to 12 or 14 fathoms. When at anchor it will be proper to examine the bottom by sounding in the boat, for in some parts there are patches of coral rock.

Se Labba Bay. Se Labba Bay is known by a round peaked hill close to its south side, called Turk's Cap, in lat. 2° 17′ S., which is seen from both sides of the island. In entering this bay the course is about S. W., and the depths 45 and 40 fathoms, decreasing to 14 or 12 fathoms inside. Rocks project from both points, but farthest from that on the south side the entrance, which must have a good berth in passing. There is a coral shoal nearly in the middle of the bay, even with the water's edge, to the southward of which the bottom is muddy, and proper for anchorage. At either of these bays a ship may be supplied with wood, water, a few hogs, yams, some poultry, and coconuts, from the people of the few straggling villages on this side the island; but the west side is said to be destitute of inhabitants.

Supplies.

Between Cape Tilleroo and Point Marlborough, the east coast of Se Pora is generally steep, but rocks project a considerable way from the shore in some places, particularly to the southward of the Turk's Cap; and from abreast of it, soundings extend along the coast towards Point Marlborough.

The west coast is also rocky, with some small islands adjoining, and the sea breaks high upon the shore: two of these islands, about 4 leagues to the westward of Point Marlborough, lie close to the shore, and near each other; they are low and flat, covered with coco-nut trees, and rocky to seaward.

The channel between the south end of Se Pora and North Poggy Island is about 3 leagues broad, and safe; there are soundings from 20 to 40 fathoms on a coral bank that stretches across betwixt the islands, when the Turk's Cap and Point Marlborough are in one, bearing about N.W. by N.; and a little farther to the eastward, there is no ground. Point Marlborough is bluff, and moderately elevated, fronted by adjoining rocks.

North Poggy and adjoining islands.

NORTH POGGY, or NORTH NASSAU ISLAND, is about 7 leagues long from N. N.W. to S.S. E., and about half that breadth; the north point, called Cape Cuddalore, being in lat. 2° 32′ S., and bearing S. E. from Point Marlborough on Se Pora, distant about 10 miles; the south point, in lat. 2° 52′ S., forms the west side of Se Cockup, which separates the North and South Poggy Islands from each other. They are both high, covered with wood, and may be seen 14 or 15 leagues.

On the west coast of North Poggy there is a group of islands, with passages and anchorage between the northernmost of them, called Pulo Laubo Laubo; but the best channel to the anchorage is round the north end of this island, from which projects a reef; and on the east side, betwixt the island and the Poggy shore, is the road, where a ship may anchor in 12 or 13 fathoms, sheltered from all winds excepting those that blow from northward. Se Laubo Laubo village is situated on the side of a rivulet at the S. E. side of the bay, where water may be procured.

Se Cockup Strait

Battoo Mongo, another village, lies near the S.W. point of the island, which is low land, and from thence to the south entrance of the Strait of Se Cockup, the coast stretches nearly East about 3 leagues, and is rocky with high breakers upon the shore. This strait is of semicircular form, containing very small islands at the southern part, and one at the other end, which opens to the eastward; and although safe, it is not a mile wide in some places. The passage to enter from the southward is between the islands off its mouth, one called Pulo Serasso, contiguous to North Poggy, and two called Pulo Supaw, near South Poggy, by keeping in mid-channel; and on the west

side of the other islands inside, where the depths are from 10 to 15 fathoms. On both sides of the N.W. point of South Poggy, which projects out into the middle of the strait, there are small bays or coves, with soft bottom and regular soundings, where a ship may occasionally anchor out of the tide; for it runs 3 knots, at times, in the middle of the passage.

Captain J. C. Ross anchored in this strait in 1823, and cut a new foremast for his ship, the Borneo, near the shore of the North Poggy Island, of an excellent species of timber. The tree is called katooka by the natives, and although the size required was 68 feet, the chief difficulty was to find a tree small enough, those of an inferior size near the shore having been cut down by the natives, to split into planks for the Padang and Bencoolen markets, where the timber of late years has come into repute. The first tree cut down measured 97 feet below the branches, and 28 inches diameter at the smallest part, and this being too large, Captain Ross was obliged to select a smaller one; the mast formed of this tree was carefully examined in August, 1826, whilst the Borneo was lying in the river Thames, and found to be perfectly sound.* Timber for masts.

Se Cocup River is opposite the N.W. point of South Poggy, on the western shore, where fresh water may be procured, and the village of that name is several miles up the river; there is also fresh water under the high land at North Poggy S. E. point, which forms the north side the entrance of the strait. This entrance is very narrow, the small Island Tongo being mid-way between the points, and both these and the islands having rocks projecting a little from them; but there are 20 fathoms in the middle of the narrow passage, betwixt the island and South Poggy Point. A little outside the strait, about half a mile eastward from the point on the north side, there is a reef of rocks even with the water's edge. Pulo Serasso at the south end of the strait, is separated from North Poggy by a very narrow channel, with from 5 to 10 feet water in it, fronting which there is a small island, having a rock upon it resembling a thatched house, when viewed from the S.W. The sea breaks with great violence upon the rock, and upon the low rocky shore to the westward.

SOUTH POGGY, or SOUTH NASSAU ISLAND, extends from the north point at the east end of Se Cocup Strait, in lat. 2° 50′ S., about S. E. by S. 11 or 12 leagues, to the south point, in lat. 3° 20′ S., about lon. 100° 34′ E.,† and it is from 3 to 4 leagues in breadth. Several small islands lie contiguous to the western coast, and on the east side, a little to the northward of the south point of the island, four small islands form a circular group, with a harbour inside of them: the channel between the two northernmost islands has 10 fathoms in it, and there are from 6 to 14 fathoms inside the harbour. This is generally called South-east Harbour, which is the only place of shelter on the east side of South Poggy; but soundings extend along it to the north point, where a vessel may occasionally anchor, opposite to some of the small villages. South Poggy.

The sea-coast of the Poggy Islands, in several places where the land is low, abounds with coco-nuts; some small spots have been planted with pepper vines, but the natives are averse to labour. It is said, that on each of the three large islands, North and South Poggy and Se Pora, there were about 800 inhabitants, when Captain Forrest

* Captain Ross is of opinion, that the shores of this strait furnish the best and most conveniently obtained spars of any place known in those seas. The natives assisted in cutting the spar, and getting it on board, and thought themselves amply remunerated by a present of coarse cutlery, beads, and small checked handkerchiefs, of about 10 dollars value altogether.

† Captain W. Owen made the south end of this island in lat. 3° 21′ S. and 1° 34′ West of Rat Island by chronometer, when passing in H. M. sloops Baracouta and Samarang in February, 1811.

was there about 50 years ago. The tide among these, and the other islands which form the chain, rises from 3 to 5 feet in the springs; but currents often run with the prevailing winds.

Islands Laage and Bergen.

LAAGE, or LARG,* and BERGEN, are two small islands, situated to the eastward and S. Eastward of the south end of South Poggy; Laage bearing from it about S. E. by E. 9 leagues, in lat. 3° 30′ S., lon. 1° 12′ West from Rat Island by chronometers; a small round island, with trees on it, lies nearly close to the east side of Laage, joined to the reef which surrounds them. Bergen bears about N.W. by N. from Laage, distant 4 or 4½ leagues, and the channel between them is safe.

Coral banks adjacent.

There appear to be some CORAL BANKS to the westward of Laage, very little known, which probably are not dangerous. The Europa, May 2nd, 1797, steering E.S.E. to pass to the southward of Laage, at 11 A.M., had ground 33 fathoms, next cast 17, 10, 9, 8, and 7 fathoms; she then hauled off S.W. and deepened in half an hour to 65 fathoms, no ground. When in 7 fathoms, upon this coral shoal, the east point of Laage bore E. by N. about 3 leagues; and at noon it bore E. by N. 4 leagues, the observed lat. 3° 32′ S. Until this shoal is better known, it will be prudent to keep 4 leagues from the west side of Laage, in steering to pass it to the southward.

The Georgina, from Calcutta towards Bencoolen, February 24th, 1824, at 6 P.M. had the south point of South Poggy bearing N. ½ E. about 5 or 6 leagues, lon. 100° 11′ E., by chronometers; steered East 18 miles till 12 P.M., had then soundings of 26 fathoms, sand and stones: steered from this position South 5 miles in 26 to 25 fathoms, then East 4 miles in 26 fathoms, regular soundings till 3½ A.M. 25th, and at 4 A.M. lost soundings with 50 fathoms line.

The David Scott, Captain Thornhill, May 3rd, 1825, had 25 fathoms hard bottom, the centre of Laage bearing N.W. ½ N. distant at least 3 leagues, and the small isle off the east end of Laarge N.N.W. ½ W. about 10 miles; being nearly calm, sent the boat to sound two or three cables' lengths from the ship, and she found the same bottom. As other coral spots may probably exist in the vicinity of Laage, not yet discovered, it seems prudent to give this island a good berth on all sides.

The channel between Laage and South Poggy seems wide and safe, by the account of the Addington, which ship passed through it July, 1804; or rather the channel between Laage and Bergen, which Captain Owen passed through in H. M. sloop Baracouta, February, 1811, probably is preferable.

Trieste Island.

TRIESTE ISLAND, in lat. 4° 3′ S., and about lon. 101° 10′ E., or 22 leagues to the westward of Fort Marlborough,† may be seen about 5 leagues from the deck of a large ship. It is small, extending about 1½ miles N. E. by N. and S. W. by S., nearly surrounded by a reef; but there is a coral bank of soundings stretching 3 or 4 miles from it on the west side, and also on the east side, where a vessel may anchor occasionally in 25 or 30 fathoms, if drifted near it by the current during calm weather; and some fresh water may be got upon the island in the rainy season. With Trieste bearing N.N.E. about 12 miles, Captain Thornhill, in the David Scott, had soundings from 65

* In the Dutch charts, these two islands are marked *Laage* and *Bergen*, signifying that the former is *low*, and the other *high*, which have been transmuted by the English into real names, by the corruption of *Laage* into *Larg*.

† Captain Owen made it in lat. 4° 3½′ S., and about 1° 8′ West of Rat Island; Captain Ashmore made it 1° 9′ West from the same, by chronometers, and in lat. 4° 2½ S.

to 85 fathoms, when passing in May, 1825. The channel between this island and Laage is spacious and safe.

ENGANO, the southernmost of the large islands fronting the west coast of Sumatra, and distant from it about 20 leagues, is from 6 to 8 leagues in extent, of triangular form, having a level appearance when viewed far off, and may be discerned about 7 or 8 leagues from the deck. It is fortified by a rocky shore, with high breakers mostly all round, the rocky ledges projecting out 2 or 3 miles in some places, with irregular soundings about a league farther out, over a bottom of coral rock. When passing the south end of the island in the Atlas, about 2 leagues' distance, we had 23 fathoms red and yellow coral rock, at the same time high breakers on the reefs appeared about midway between us and the shore. On the east side, to the northward of the S.E. point, there is a bay inside of four small islands, with anchorage over a sandy bottom, and shelter from most winds in the upper part of it, which extends considerably into the land. The islands are surrounded by rocks, except the innermost small one, of a sandy soil, has 8 or 4 fathoms close to, on the inside, and there is anchorage near it, over a sandy bottom. The channel leading into the bay is betwixt the two outermost islands, having 18 fathoms coral rock in mid-channel, and 7 to 4 fathoms white sand inside, between the inner island and the north point of the bay, and here it is narrow and bounded by rocks. To the northward of the bay there is a small stream of fresh water, but the landing in most parts is difficult; it abounds with good timber, fine fish, yams, and coco-nuts. Captain Owen visited this island in November, 1806, in H. M. sloop Seaflower, and H. M. ship Dover grounded near Amsterdam Island, the largest of those fronting the bay, November 24th, 1809. When at anchor in 5 fathoms between the islands, for the convenience of watering, observed lat. 5° 27′ S., the S. E. point of Engano bearing S. by W. $\frac{1}{4}$ W., east point N. by W. $\frac{1}{4}$ W., eastern island North to N. N. E. $\frac{3}{4}$ E., western island S. $\frac{3}{4}$ E., small green islet S. W. $\frac{3}{4}$ S., watering place S. W. $\frac{1}{4}$ W. Whilst watering here, the crews of the Dover's boats were attacked by the natives, and several of the people speared.

Engano Island.

Supplies.

Captain Owen's observations, together with those of the Dover, made the anchorage between the islands in lat. 5° 27′ S., lon. 102° 28′ E.,* the north point of the principal island he made in lat. 5° 12′ S., lon. 102° 10′ E., and the south point appeared to be in lat. 5° 39′ S., lon. 102° 15′ E., or 5 miles East of Rat Island, Fort Marlborough.

The snow Fancy made the south point in lat. 5° 35′ S., and Captain Napier made it in latitude 5° 31′ S., or 8 miles less than Captain Owen. The island is well inhabited by people nearly of the same colour, but stouter and more active than the Malays. They go without clothing, and are armed with spears, made of hard wood, pointed with bone or iron, which they use for striking fish; they have canoes that carry 6 or 8 men.

Natives.

Captain John Napier, in the ship Good Hope, in 1816, was sent from Fort Marlborough in search of the survivors of the crew of the ship Union, Captain Barker, who were retained in captivity† by the inhabitants of this island, after the ship was wrecked there. Captain Napier made a sketch of the island, which was engraved at Calcutta in 1817, accompanied by the following remarks and observations.

The north point of Engano is in lat. 5° 15′ S., lon. 102° 9′ E., and the northern coast is

Capt. Napier's remarks.

* Captain Napier's chronometers made the anchorage 11$\frac{1}{2}$ miles East of Rat Island.

† Captain Barker, the officers, and most of the crew, perished under the cruel usage they received from these savages.

bold, having no soundings from 3 to 5 miles off; the beach consists mostly of sand, but in some places the shore is rocky.

From the north point the coast extends E. by S. $\frac{3}{4}$ S. 15 miles, to a point in lat. 5° 20′ S., lon. 102° 23′ E., and from this another point bears S. S. E. $2\frac{1}{2}$ miles. South 3 miles of the latter lies North Island, covered with trees, and, excepting a small opening on the west side, it is surrounded by a coral reef of considerable extent, partly dry at low water, but having deep water close to it all round. South Island, distant 3 miles S. by W. from North Island, is also covered with trees, and surrounded by a reef, excepting the western side, which has a sandy beach bold to approach. Middle Island is very conspicuous from the sea, having a high sandy beach, with a tuft of trees on the centre. A reef extends from this island to the S. S. E. and Eastward, but it is bolder to approach on the north and west sides. Sandy Island, bearing N. N.W. less than half a mile from Middle Island, is not more than 6 feet above the surface of the sea, and a reef projects from it both to the eastward and westward; but on the north side it is bold, with 8 fathoms close to the beach.

Contiguous islands.

The reef of the main island projects far out towards Sandy Island, rendering the passage narrow, though perfectly safe, the reefs being steep to on both sides, with 10 and 11 fathoms water in the channel. The passage between Sandy and Middle Islands is still narrower, with 11 fathoms water, and equally safe. The passage between Middle and South Islands has 16 and 17 fathoms water, and is also safe, by keeping near to South Island, until it bear to the N. Eastward.

Passages between the islands.

Between South Island and the low S. E. point of the main island there is no passage, even for a boat. The passage between North Island and the main should not be attempted, as the reef extends far out from the coast, rendering the passage very narrow.

Anchorage.

Outside of Middle and Sandy Islands there is shelter from the prevailing winds in either monsoon, in 12 to 14 fathoms sand, good anchorage, and plenty of wood may be got from either of the outer islands; but as water can only be procured in the inner bay to the northward of the village, a ship requiring a supply should anchor there, to protect her boats and people, the natives being very treacherous. A vessel may anchor in 4, 5, or 6 fathoms sand and mud, within little more than a mile of the creek, keeping nearest the south shore, which has in most places a sandy beach, bold to approach, the trees growing quite into the water in some parts.

S.E. Point.

The S. E. Point of Engano, in lat. 5° 30′ S., lon. 102° 22′ E., is low and sandy, covered partly by a range of palmira trees. The reef projects from this point 2 miles to the S. E. and East, and joins that from South Island, having very high breakers.

South Point.

The South Point, in lat. 5° 30′ 50″ S., lon. 102° $13\frac{1}{4}$′ E., distant 9 miles West, a little southerly from the S. E. point, projects in an acute angle, having, about a mile distant to the S. Eastward, a pyramid or black rock, about 8 feet above water. Between these points the coast forms a concavity, fronted by the coral reef, at 1 to $1\frac{1}{2}$ miles distant, on which the sea breaks high in many places. In sailing along this part of the coast at 4 miles' distance, no danger appeared from the mast-head, excepting the reef, which is steep to; and it was here, about 3 miles eastward of the south point, that the Union was said to have been lost.

West Point.

The West Point, in lat. 5° 21′ S., lon. 102° 3′ E., by chronometer from Rat Island, allowing the latter to be in lon. 102° 10′ E., bears from the south point N.W., distance 14 miles; but the coast between them forms a concavity, having a small island near it, in lat. 5° 26′ S., lon. 102° 10′ E., surrounded by a coral reef to seaward, projecting above half a mile, with high breakers. Here Captain Napier remained four days, and

anchored several times in 25 fathoms coral and sand, in coasting along this part, where the part of the Union's crew were recovered; the land is higher, seems better cultivated, and has more inhabitants than any other part of the coast. The coral reef that fortifies this coast must be very dangerous to approach in strong S.W. winds.

From the west point, the north point of the island bears N. E. a little easterly, distant 8 miles, the coast between them forming two intermediate points, from which the reef projects above a mile, with soundings near it from 35 to 25 fathoms; soundings of 35 to 15 fathoms are obtained on most parts of the southern coast, at the distance of a quarter to $1\frac{1}{2}$ or 2 miles from the reef.

Formerly ships steering for Sunda Strait during the N.W. monsoon, when not certain of their longitude, endeavoured to get a sight of this island, which requires great caution, on account of the surrounding reefs and the savage disposition of the inhabitants.

KEELING, or COCOS ISLANDS, have been described in the first volume of this work. Their value to navigators remained unknown, until Captain J. C. Ross visited the southern group in the ship Borneo, and found a good harbour, where he lay from the 5th to the 9th December, 1825, putting the ship in a proper state to encounter stormy weather which might be expected on the passage to England, for she had been found crank after leaving Padang. *Keeling or Cocos Islands.*

As there are two groups of islands in those seas, known by the general name of Cocos, one near the Great Andaman, and another near Hog Island, off the west coast of Sumatra, Captain Ross has distinguished the islands of the southern group by different names, in his plan of the harbour which he explored within this circular chain. KEELING is the former name of these islands, and which Captain Ross gives to the north island, it being far detached from the southern group. This group, named BORNEO CORAL ISLES, consists of a circular chain of islands almost touching each other, lined on the exterior side by a steep coral reef, and forming inside an extensive lagoon or harbour, named PORT ALBION, or REFUGE PORT. It has only one entrance for ships, which is at the northern extremity, and is about 2 miles wide; this is bounded on the west side by Horsburgh Island, the northernmost of the chain, and considerably detached from the others, and by Direction Island on the east side. Straggling rocks, and an extensive reef, called Turf Reef, stretches from Horsburgh Island to the South and S. S.W., uniting with Ross Island, which forms the west side of the harbour, and is 5 or 6 miles in length. Scott Island is in the form of a crescent, and lies at the S. E. angle of the harbour, the south and western sides of which are bounded by the coral reef. From the north end of Scott Island, the east side of the harbour is bounded by a close succession of small isles, stretching to Clunie Island, which approaches near to Direction Island, there being only a few islets between them. This coral chain of islands, or rather *wall*, in the middle of the ocean, is elevated only from 3 to 10 feet above the sea, at high water spring tides. Most of the isles are covered with coco-nut trees, and two other species, one of them soft, white, and spongy; the other heavy, hard, dark-looking timber. The coco-nuts contiguous to the sea have a saline taste, and are small, but those in the middle of the islands are good. The beaches abound with land crabs, aquatic birds, and turtle. *Borneo Coral Isles.* *Port Albion.* *Surrounding islands.* *Description.*

A ship intending to enter Port Albion should pass near to the north end of Direction Island, to avoid the reef on the western side of the entrance; soundings will be got suddenly, when on a transit line joining the two islands that form it, and when *Directions.*

inside about a mile, having brought the north extreme of Direction Island to bear about E. N. E. or N. E. by E., she ought to anchor in 6 or $6\frac{1}{2}$ fathoms in the outer anchorage, which is perfectly smooth, and not proceed farther until she has examined the channels leading to the East or West Harbours inside. These harbours are separated by a large rocky shoal in the middle of the port, called Dymoke Shoal, or Middle Ground, having on it from $1\frac{1}{4}$ to $2\frac{1}{2}$ fathoms water. The southern extremity of the port also is all very shoal.

The outer anchorage is sufficiently capacious to contain a great number of ships, but is in some parts spotted with *mushroom* coral, which may easily be avoided in anchoring, as the water is very clear. The bar or flat, inside the outer anchorage, is extensive, also spotted widely with coral, and all the rocks are of this substance.

Ships drawing above 18 feet water should not attempt to sail in over the bar; but if on an emergency they do so, the coral patches may be avoided by a careful person on the fore yard directing the ship's course. These patches are elevated two or three feet above the natural level of the bottom, and being of the mushroom species, of a darkish colour, are easily discerned at a considerable distance, as the water is extremely clear, and the sandy bottom of snowy whiteness.

Ships drawing about 21 or 22 feet water, intending to go inside, may warp over the bar, and afterwards choose either the Eastern or Western Harbours at discretion, taking care to avoid Dymoke Shoal, which is an extensive coral flat, with overfalls near its edges, and, lying on dark bottom, is not easily discernible. The depths on the bar are $3\frac{1}{2}$, $3\frac{3}{4}$, to 4 fathoms, and the best track is a little nearer to the islands on the eastern side than mid-channel, the depth increasing when over the bar, to 5, 6, 7, or 8 fathoms in approaching the inner harbour, on either side of Dymoke's Shoal.

Captain Driscoll, of the Lonach, from Port Jackson, bound to Bombay, November 24th, 1825, passed close to the northernmost of the Borneo Coral Isles, and sent a boat to that called by Captain Ross Horsburgh Island, which Captain Driscoll made in lat. 12° 3′ S., by noon observation taken two hours previously, and he made it in lon. 97° $2\frac{1}{2}$′ E. by observations of sun and moon, which agrees with the position assigned to these islands in the first volume of this work. The Lonach's boat landed on a fine sandy beach, covered with crabs and aquatic birds, and a path was perceived where the branches were parted and the leaves trodden down, leading into the jungle; several snakes were seen also; and a large mast, with a bowsprit and teak carline, the remains of a wreck.

New Selma. New Selma, where Captain Ross resides, is on Scott Island, at the S. E. angle of the harbour, in lat. 12° 12′ 40″ S., lon. 97° 10′ E.

Tides. The tide or flood runs into Port Albion, about $1\frac{1}{2}$ miles per hour over the bar, rises from 5 to 6 feet; high water about 4 hours on full and change of moon.

PASSAGE BETWEEN INDIA AND THE STRAIT OF SUNDA, AND THE STRAITS EAST OF JAVA.

Passage from Hindoostan to Sunda Strait, between March and October.

SHIPS proceeding from Ceylon or the Coromandel Coast for Sunda Strait, whilst the S.W. monsoon is prevailing in north latitude, and the S. E. monsoon in south latitude, from March to October, ought to run down great part of their easting with the S. W. monsoon, before they cross the equator. If they cross it in lon. 93° or 94° E., Southerly and S. S. Westerly winds, with variable squalls, may be expected to carry them to the S. Eastward, and a reasonable distance from the islands off the west coast of Sumatra may be preserved, by making a tack to the S. Westward at times, when the wind veers to the S. E. A drain of current to the northward may sometimes be experienced, but a ship will generally make considerable progress to the S. Eastward by taking every advantage of the shifts of wind ; for, in the vicinity of the islands, or within a few degrees of them, the winds hang much from South and S. S. W.; whereas, in the ocean, far to the westward, the monsoon will be found to prevail from the S. E. as a ship advances into south latitude, which will greatly prolong her passage, should she have crossed the equator far to the westward.

If bound to Fort Marlborough, it will be prudent to get into the parallel of that place before the islands are approached, then steer in for the coast to the southward of Trieste Island, or betwixt it and Laage, as the winds permit. A ship bound direct to Sunda Strait should keep out from the land until she reach the entrance of the strait; here, her progress will generally be more speedy than by keeping near the shore; although a fast-sailing vessel may pass along the coast backward and forward, between Fort Marlborough and Sunda Strait, in either monsoon.

Passage from Hindoostan to Sunda Strait between October and March.

SHIPS bound to Sunda Strait, from October to March, when the N. W. monsoon generally prevails to the southward of the equator, may follow nearly the same track recommended above for the opposite season, if they leave the Coromandel Coast, and are enabled to run down a considerable part of their easting with the N. E. monsoon, before they cross the equator.

Ships departing from Ceylon, in October, November, March, and April, when N. W. winds are seldom found to prevail *much* in south latitude, ought to stand off nearly close to the wind, if it blow from the N. E. quarter, and endeavour to make several degrees of easting before they are forced close to the equator by the N. E. monsoon, which they will probably experience in November and March, at leaving Ceylon. In December, January, and February, this may not be always necessary, for the N.W. monsoon generally blows strongest in these months to the southward of the equator, particularly in the latter part of December, all January, and part of February. In these months, ships may steer a direct course from the South or S. E. part of Ceylon, towards the entrance of Sunda Strait; but, even at this time, it is prudent to stand to the E. S. Eastward with the N. E. monsoon, until the bay is open, to avoid strong westerly currents and light winds, likely to prevail in November and December, on the meridian of Ceylon, nearly to the equator; and in the space comprised between that meridian and the Maldiva Islands.

Passage to the straits East of Java.

SHIPS bound to any of the straits East of Java ought, in the strength of the N.W. monsoon, to make the Island Noesa Baron, in order to correct their reckoning; for in December and January, the weather is often thick near the south coast of Java, with strong westerly winds and easterly currents: should they fall in with that coast farther to the westward, and pass along at the distance of 4 or 5 leagues, they will usually have more favourable winds near the shore, than if farther out in the offing.

Captain Pope, in the ship Minerva, bound from Bombay to China, with the Ardasier in company, left Ceylon, December 11th, 1808, and made Steep Point on the 31st; they steered a direct course from Ceylon, and were considerably delayed by light winds. On the south coast of Java they had fine weather and light breezes, which enabled them to make the following observations in coasting along.

From Steep Point, in lon. 107° 23′ E. by chronometer, a course E. by S. will carry a ship in sight of a bold and remarkable headland, in lon. 111° 6′ E., which appears the easternmost point of a very deep bay, called in some charts Inland Bay. About 80 miles E. by S. from this headland are situated the point and islets of Tangala, and two remarkable hills near the shore to the westward.

From the isles of Tangala, the course is E. by S. ½ S., 70 miles to Noesa Baron, which the Minerva passed near, made the east point of Java, January 5th, 1809, and anchored on the 9th, at Bally Town, in the Strait of Allass

In November and December, strong westerly currents South of Ceylon.

The Anna, bound to China by Sunda Strait, was embarrassed a considerable time in November and December, to the southward of Ceylon, by light winds and strong westerly currents; she did not reach Sunda Strait till the 3rd of January, 1793.

The Britannia left Ceylon for Amboina December 6th, 1800, and with North, N.W., and West winds, she only reached lat. 3° 0′ N., lon. 81° 0′ E., on the 11th, having experienced a daily current of 60 miles, and sometimes more, setting to the W. N. W. and Westward.* The current then abated, and changed to the eastward on the 12th; she crossed the equator on the 16th, and with a continuance of W. N. W. and W. S. W. winds and changeable currents, mostly setting to the eastward, saw the south coast of Java 26th; had then strong westerly winds, squally weather, and rain, with a current of 30 miles on some days to the eastward, with which she anchored in Sapy Bay, January 1st, 1801.

Passages from Ceylon to the Island of Java.

The Canton, and fleet for China, in company, left Ceylon December 30th, 1796, made the S. E. part of Java January 27th, 1797, and anchored in Allass Strait on the 29th.

In the latter part of November, and the first part of December, 1794, the Woodford and fleet, for China, had brisk westerly winds steering direct from Ceylon to Sunda Strait.

In the Atlas, we left Point de Galle for Batavia, January 8th, 1786, and for two days kept nearly closed hauled to the N. E. monsoon, blowing then fresh at N. E. by E., which decreased on the day following, and was succeeded by variable breezes. On the 12th, in lat. 2° 40′ N., lon. 83½° E., a strong N. N.W. monsoon commenced, with which we crossed the equator 15th, in lon. 91° E.; the wind veered afterwards to West, and continued mostly between N.W. and S.W., with cloudy weather and much rain, until in lat. 5½° S., lon. 100° E., we had faint breezes three days: strong N.W. winds

* Although the Anna, Britannia, and other ships, experienced strong westerly currents to the southward of Ceylon in November and December, which prolonged their passage, and the former had very light winds, this does not always happen; for the Bahar left Cape Comorin 16th December, steered from thence S. S. E., crossed the equator on the 20th; here, she got strong N.W. winds, and made a quick passage to Sunda Strait. The Sulivan, several years after, followed the same track as the Bahar did, and was equally fortunate.

returned, with which we passed Engano on the 25th, and entered Sunda Strait the following day.

In February, light winds are often experienced in the track between Ceylon and the N.W. end of Sumatra; if, therefore, a ship, after leaving that island, meet with light winds in north latitude, she should approach the equator without loss of time, where N. Westerly and variable winds may generally be expected in February and part of March.

INSTRUCTIONS for approaching JAVA HEAD, throughout the year, are given in Vol. 1st of this work, under the title "Directions from St. Paul, to the Strait of Sunda." Nevertheless, it may sometimes be expedient to deviate in some degree from *general* rules, as the winds and currents are liable to differ in some months of one year, from their direction in the corresponding months of another year, as may be seen by the following examples. Instructions for approaching Java Head.

In May and June it is always thought safe to fall in with the land to the eastward of Java Head, if bound into Sunda Strait; as the S. E. monsoon generally prevails in these months along the south coast of Java. The Cadogan, however, fell in with Java Head, May 24th, 1729, and experienced variable winds from the westward, with S. Easterly currents, which kept her working in sight of the Head till the 10th of June, and prevented her from reaching Bencoolen until the 20th of this month.

The Montagu, bound to Amoy, in China, fell in with the south coast of Java to the eastward of Java Head, October 8th, 1703, where she had variable baffling winds, and a constant current of 2 to 2½ miles per hour setting to the eastward. She got soundings generally within 3 or 4 leagues of the coast, excepting in the great bay to the eastward of Java Head, where no ground was obtained with 100 fathoms line within a mile of the shore. Although she frequently anchored, to prevent losing ground by the current, and ultimately got S. E. and easterly winds, yet she did not get round Java Head into the strait until the 22nd of that month. It is therefore advisable to steer nearly direct for Java Head in most seasons, if bound to the Strait of Sunda, and if the ship's longitude be correctly known, borrowing a little to the eastward or westward when it is approached, as may be required by the prevailing wind, or other circumstances at the time. If bound to Bencoolen, a direct course to make Engano will probably be found the most speedy in May, June, and part of July, and from thence direct for Bencoolen, as the winds admit, because in these months the winds are often at N. Westward, with southerly and easterly currents.

SHIPS bound from JAVA HEAD for Bombay ought to run down their westing in the S. E. trade, and adopt the southern route, between the Chagos and Seychelle Islands, from March to September. If they approach near the equator early in April, or in October, when N.W. and Northerly winds prevail in north latitude at the changing of the monsoons, they may, if the wind incline from the West and N.W., steer to the northward on the east side of the Maldiva Islands, and endeavour not to fall in with the Malabar coast until past Calicut or Mount Dilly. But if they are several degrees to the westward of the Maldiva Islands when the equator is approached, the best passage to Bombay may be expected in April, part of September and October, by keeping to the westward of the islands, and avoiding the coast. Passage from Java Head to Hindoostan.

From October till March it will be advisable to cross the equator nearly on the meridian of the south end of Ceylon, as westerly winds are likely to prevail near the equator, and from thence a few degrees to the northward, which will be favourable for

steering to fall in with the land about Dondre Head or Point de Galle; afterwards, they may cross the Gulf of Manar, and follow the directions for sailing along the Malabar coast, given in the first volume of this work, under the head "Monsoons, Land and Sea Breezes, and Currents, on the western side of Hindoostan."

Ships bound from Java Head to Madras in the S. W. monsoon ought to make the Friar's Hood on the east part of Ceylon, or at all events not fall to the northward of their port. If bound to Madras or Bengal in the N. E. monsoon, they ought to borrow within 3° or 4° of Hog Island or Achen Head, in passing into the Bay of Bengal, and follow the directions given for ships proceeding from Europe by the "Outer Passage, to places on either side the Bay of Bengal."

SUNDA STRAIT.

Entrance of Sunda Strait.

SUNDA STRAIT has two channels, which lead into it from the westward, the small channel between the west end of Java and Prince's Island, and the great channel to the northward of this island, betwixt it and the south coast of Sumatra, now to be described. The south coast of Sumatra, between Flat Point on the West, and Tanjong Toca or Hog Point on the East, occupies about a degree of longitude, and is indented by two large bays, the shores of which are fronted by numerous islands and rocks.

Semanko, or Keyser Bay and contiguous land.

SEMANKO, or KEYSER BAY, formed between Tanjong Chinna and Tanjong Tekoos, indents the land about 5 leagues in a N. Westerly direction, and is about 3 leagues wide, having various depths, from 50 to 100 fathoms at the entrance to 10 and 15 fathoms inside, along the western shore, and at the upper part, where the anchorage is good over a muddy bottom: the village of Borne stands close to the N.W. part of the bay, where are some shoal rivulets; the shores are generally low, and the land marshy near the sea, but in some places there are pepper plantations. The ship Speke, in 1793, anchored in 15 fathoms about $1\frac{1}{2}$ miles E. N. E. from the mouth of Borne rivulet, which the long-boat could not enter; here, refreshments of all kinds were procured from the Dutch Resident. A little inland from the N.W. angle of the bay stands a high conical mountain, 2° $8\frac{3}{4}'$ W. from Batavia by chronometers, called Samanca, or Semanko, Peak; and to the eastward, between it and Lampoon Bay, there are other mountains, the highest of them called Lampoon Peak: these mountains are discernible a great way at sea, in clear weather, by ships approaching Sunda Strait.

Tubooan, or Keyser Island.

Tubooan, or Keyser Island, situated in the middle of the entrance of the bay, is high, bold, and safe to approach, the channel on either side of it being spacious and clear of danger; but the water is deep, and the bottom rocky in some places. On the N. E. side of the island there is anchorage in 15 or 16 fathoms, sandy bottom, about a mile from the shore; and near the east point there is a salt water creek, having 6 feet water at the entrance, with fresh water at its head, where a supply may be procured. There are some pepper plantations on the island, and tall trees at the east end, fit for masts.

Caloombyan Harbour.

CALOOMBYAN HARBOUR, on the eastern side of Keyser Bay, at the entrance of Sunda Strait, has been surveyed by Lieutenants Hull and Johnston, of the

Royal Navy; it is small, but safe, sheltered from all winds, with sufficient depths of water for large ships, and well adapted for a fleet in want of refreshments, as every supply may be obtained, and the delay in the south-east monsoon would not be so great here as at Batavia.

This harbour lies nearly east from the north end of Keyser Island, and may easily be discerned by Pulo Eeyoo and Pulo Clappa, two small islands lying about a mile outside the entrance, having a safe channel, with 25 fathoms water between them.

The inner harbour is convenient for the native trade, as small vessels can load and unload alongside the beach, and the village is three-quarters of a mile from the landing place, situated in a valley, apparently a healthy spot.

By a few guns properly placed upon Pulo Clappa, Pulo Eeyoo, and the south point of the harbour, this place might be rendered secure against the strongest force.

To sail into the harbour in the north-west monsoon, enter by the western passage formed between Pulo Clappa and the north point, called Tanjong Napal, where the depths are from 30 to 22 fathoms. Directions.

In the south-east monsoon, enter between Pulo Clappa and Pulo Eeyoo, if you have a steady breeze.

The eastern passage between Pulo Eeyoo and the main is only safe for small vessels: both the islands are bold, having 22 fathoms water close to them. When abreast of Pulo Clappa, the south point of Keysers Island should be kept well open to the southward of Pulo Clappa, and with this mark, steer in till Oogooron Point bears North, which forms the north side the entrance of the inner harbour, then anchor in 9 or 10 fathoms, black mud; but in all parts of the harbour a ship may safely anchor, there being no invisible danger.

There is a small cove farther to the eastward near Tanjong Tekoos.

LAMPOON BAY, formed between Tanjong Tekoos on the West, and Rajah Bassa on the East, is very extensive, being 6 or 7 leagues wide at the entrance, stretching northward into the land nearly the same distance. From Tanjong Tekoos a chain of islands extends a considerable way to the eastward, having channels betwixt some of them, and between them and the point, with soundings from 40 to 20 fathoms. Other islands line the western shore of the bay inside, between which and the main, there are several good roads or places of shelter, formed by the adjoining islands and shoals, with some villages opposite to them on the main. Lampoon Bay and adjoining islands.

PULO GOONDY, the outermost and largest island, is separated from Tanjong Tekoos by Goondy Strait, about half or three-quarters of a mile wide, with 30 or 40 fathoms water in it, and no soundings outside in the entrance, which renders it rather difficult for large ships, on account of the eddy winds from the high land, which are accompanied at times by strong currents. But with a leading land-breeze in the morning, a ship might run out through it with safety. Pulo Goondy and Strait.

The fleet from China, having watered at Rajah Bassa, worked across Lampoon Bay, to keep in smooth water on the weather shore, intending to pass out on the west side of the bay between Tanjong Tekoos and Pulo Goondy, but the Arniston having struck on a rock about half a mile to the N.E. of the small island Oomowoomang, which lies near the north end of Pulo Goondy, induced the fleet to pass out to the eastward of it and the adjoining islands, in a good channel formed by these on the west side, and the small island Saradong to the eastward, called also Tims Islet, which on the east side is covered with brush-wood. When in this channel, Crockatoa Peak bore South.

The Waterloo, Captain Alsager, in April, 1822, homeward-bound from China, came from Rajah Bassa, inside the islands off Lampoon Bay, and then between Pulo Goondy and the main, which strait was considered safe. When in mid-channel and in the narrowest part, a cannon-ball, fired off from each side the ship, reached the shore on both sides of the passage; and at 8 A.M., in the centre of the channel, soundings of 40 fathoms were got, with Pulo Sarasat East, and Tanjong Tekoos bearing West. The Waterloo passed through this channel in the morning, having anchored during the preceding night in Pedada Bay, which affords good shelter.

The Company's ship Abercrombie Robinson, Captain Innes, proceeded through it on the 19th December, 1830, homeward-bound from China, and had room to work through. She entered the north end of the passage in the morning with a light breeze at W. S. W., steered to the southward for a small island, tacked at 8 A.M. to northward, and at 8 hours 30 minutes tacked again to southward, passing within a quarter of a mile of the western point that forms the narrowest part of the passage. A current set strong through the passage to the southward, which Captain Innes thinks would drift a ship clear of either shore during a calm, if the depths were too great for anchorage.

He returned through this strait in the same ship, in December, 1832, and considers it quite safe.

Nangga Harbour. On the north side of Pulo Goondy a small bay is formed, called Nangga Harbour, with the little island Pulo Patappan in the middle of the entrance, on the east side of which is the best passage into the harbour, by borrowing near the shore of Pulo Goondy; here, the depths are from 15 to 10 fathoms, and there are from 12 to 7 fathoms inside the harbour, where a ship might moor secured from all winds, and careen if necessary.

Captain Owen careened H. M. S. Baracouta here, in February, 1811, and moored with the west extreme of the harbour bearing N.W. 1 mile, east extreme N. E. ½ N. 1 mile, west extreme of Pulo Patappan N. by W. 2 cables' lengths, east extreme of the same N. N. E. 2 cables' lengths, distant from the bottom of the harbour 1 mile, and from the reef 1 cable's length. Observed lat. 5° 46′ S., lon. 105° 4′ E. Position.

Rajah Bassa Road. RAJAH BASSA ROAD, situated directly under the high land, called Refreshment Head, that forms the east side of Lampoon Bay, has frequently been visited by the homeward-bound China ships, it being an excellent place for procuring good water with facility, and turtle at 1 dollar each; a few fowls, buffalos, oranges, and plantains, may be got for coarse cutlery, the natives seeming to care little for dollars, when the fleet touched here in February, 1815, under convoy of H. M. S. Grampus. The Winchelsea* anchored in 12 fathoms, blue mud, with Rajah Bassa Peak N. E. by E. ½ E., extremes from N. ¼ E. to S. E. ½ E., off shore 1½ miles, which is a good berth for watering, there being two runs of fine water issuing from the high land nearly abreast, and another to the eastward of Coco-nut Point, either of which would supply a fleet of ships.

The fleet from China, under convoy of H. M. S. Cornelia, Captain William Owen, anchored here January 21st, 1813; the Neptune, in 16 fathoms, blue mud, had the westernmost of the Three Brothers bearing S. W. by W., Crockatoa Peak in one with the high land of Pulo Sebese S. S. W., off the nearest of the Three Brothers 3½ miles, and from Rajah Bassa shore 3 miles. Large ships ought not to anchor under 11 or 10 fathoms, for although the soundings decrease regularly over a soft

* Captain William Moffat, of the Winchelsea, at this time, made an excellent survey of Rajah Bassa Road, with the soundings from thence to Hog Point.

bottom to 7 or 8 fathoms in general, yet the shore is fronted by a rocky bank, which projects to 5 or 6 fathoms in some places, and is very steep to.

Rajah Bassa Peak, called also Ejow Peak, is about 1,600 feet high, the anchorage of the road opposite, Captain Owen made by observation in lat. 5° 50′ S., and it is about 7 miles East of Crockatoa Peak, or in lon. 105° 32′ E. The water deepens to 25 and 27 fathoms towards the Three Brothers, which lies about 4 miles W. by N. from Coco-nut Point; and there are 18 fathoms in the gut between the Middle and South Brothers: these three islands appear as one in coming from the eastward, and do not begin to open until Rajah Bassa Road is approached. The depths, from Rajah Bassa Road across Lampoon Bay to Pulo Goondy, are from 13 to 19 fathoms, regular soundings and good anchorage. Position of the anchorage.

The south extreme of Rajah Bassa Road, called Coco-nut Point, is low, with coconut trees overhanging it, from whence the coast trends easterly, forming a concavity between it and Hog Point; the land is rather low near the latter, but rises gradually to an elevated peak about a league eastward of Coco-nut Point.

TANJONG TOCA, or HOG POINT, situated about 4 leagues to the south-eastward of the east point of Lampoon Bay, in lat. 5° 54′ S., lon. 105° 43½′ E., or 1° 8½′ W. from Batavia, by chronometer, is the south-easternmost extremity of Sumatra, and bounds the Strait of Sunda on the north side. Tanjong Toca, or Hog Point.

There is a rock 6 or 7 feet above water, distant 2 miles N.W. from Hog Point, called Collier Rock, being about 56 feet in circuit; and 50 feet distant from it, lies a coral rock under water. These are about a mile distant from the shore, with 50 or 55 fathoms water close to, on the outside. There is another rock above water, bearing South from Hog Point, distant two-thirds of a mile, with 65 or 70 fathoms outside of it, and deep water between it and the point, which seems steep to, as no bottom could be got with the hand-lead in sounding close to it with a boat. Adjacent rocks.

ZUTPHEN ISLANDS, called also HOUNDS, or HOG ISLANDS, front the coast of Sumatra to the North-eastward of Hog Point; there are several shoals and islets between them and the main, among which there is said to be anchorage in some places. The largest of these islands, and part of the coast adjacent, is high land, mostly covered with wood; to the southward they are very steep, having from 40 to 50 fathoms water very near them, where they ought not to be approached close; but towards the northernmost there are from 23 to 30 fathoms; and here ships might occasionally anchor, particularly off the north end of this island, which lies in lat. 5° 50′ S. The Pigot anchored here in January, 1770, in 20 fathoms, mud and sand, Bantam Point bearing E. by S. ½ S., Fourth Point of Java S. ¼ E., west extreme of Thwart-the-way S. by E., North Island N. by E. ¼ E., Hog Island S. W., distant about a mile from a small island that lies near the north extreme of the Zutphen. The boat had regular soundings from the ship to the entrance of a river on the coast of Sumatra, which bore from her N. N.W.; she was launched over the bar, and they went about 1½ miles up the river, where Tangrea village stands, with rice fields about it, cattle, poultry, and plenty of coco-nuts. Here, it is thought, some bullocks and poultry may be procured for dollars; but Europeans landing on any part of the coast of Sumatra must be always on their guard, for the natives are seldom to be trusted. Zutphen Islands, and the neighbouring coast. Anchorage.

The Lascelles, in December, 1792, anchored in 15 fathoms; North Island bearing N. by E. ½ E., the outermost point of Hog Islands S. ¾ W., and the watering place S. W. by W. ¼ W., off shore 2 miles. The water, although not brackish, was very soft,

and fit only for culinary purposes. Captain Jameson, of the Balcarras, says, the best anchorage in Hounds Bay is to bring the Zutphen Islands in one, in 11 fathoms.

The anchorage near the northernmost is stated by Captain Ladd to be preferable to the anchorage at North Island, during southerly winds, and also for obtaining a supply of water at a Malay village on the coast adjacent, which bears W. by N. from one of the northernmost islands. In November, 1830, he remained several days at anchor in the ship Austen, during strong S.W. gales, in 9 fathoms water, soft ground, about $1\frac{1}{2}$ miles off shore, with the Zutphen Islands bearing S. E. to S.W. by S., and had very smooth water.

Reef off Houts Island and dangerous current.

From the South Zutphen Island, called Houts, or Woody Island, there is a reef of rocks, distant about 2 cables' lengths, with 10 and 12 fathoms in the narrow gut between it and the island. February 12th, 1815, the China fleet, in passing these islands, found a current sweeping round them to the westward, at the rate of $4\frac{1}{2}$ miles per hour, with strong ripplings rushing in among the island, which horsed some of the ships close to danger: the Bombay, after dropping two anchors, was driven upon the reeff off the South Zutphen Island, and after throwing part of her cargo overboard, all her guns, &c., with great exertions of the fleet, she was hove off the reef into the deep gut between it and the island, with great damage, which made it necessary to proceed to Bombay, where she underwent a complete repair. When aground on the reef, Stroom Rock bore S. $36\frac{1}{2}$° E., Thwart-the-way from S. 31° E. to S. 53° E., Button E. 8° S., St. Nicholas Point East, North Island N. 10° E., islet off the northernmost Zutphen N. 6° E., and the south-east point of Houts or Woody Island S. 31° W., being then on the inside of the reef of rocks, and 150 fathoms distant from the shore of Houts Island.

The Castle Huntly brought up with two anchors in 14 fathoms rocks, about a cable's length N. 47° E. from the Bombay aground, with a reef off the N. E. end of Houts Island in one with the extreme of Long Island, or North Zutphen bearing N. 37° W.; from this dangerous situation she got clear by slipping one cable and with springs on the other, cut it, and sheered out clear of the reef.

On account of the rapid currents experienced near these islands at times, in the westerly monsoon, ships ought not to approach them at the south and south-east parts, nearer than $1\frac{1}{2}$ or $1\frac{1}{4}$ miles, particularly in passing Houts Island.

Great Channel at the entrance of Sunda Strait.

GREAT CHANNEL, to the northward of Princes Island, at the west entrance of the Strait of Sunda, is separated into several passages by three large islands, lying betwixt Princes Island and the land on the east side of Lampoon Bay. The southernmost of these channels is about 6 or $6\frac{1}{2}$ leagues broad, formed between the north end of Princes Island and Crockatoa; although destitute of soundings or anchorage, it is much frequented, being the widest passage into the strait, and is considered clear of danger.

Sunken Rock.

A sunken rock was placed in some old charts, about 5 or 6 miles to the S.S.W. of Crockatoa, said to have been seen by Lieutenant M'Cluer: Captain Drury, of the Navy, is reported to have examined it a few years ago, and found it to be a rock near the water's edge. There is, however, great cause to think there is no rock existing in this place, and that the channel is clear from the south end of Crockatoa to the north end of Princes Island.

Crockatoa.

CROCKATOA, or KRAKATOA, extending nearly North-west and South-east, about 6 or 7 miles, and 4 or 5 miles in breadth, is a high island, steep to on the south

side, but having a reef of rocks projecting a little way from the S. E. point. Near the S.E. end of the island is a conical peak,* in lat. 6° 8½′ S., lon. 105° 25′ E., or 1° 26′ W. from Batavia, by chronometers, bearing about N.E. by N. from the N.E end of Princes Island, distant 7 or 7½ leagues. Several small islands lie contiguous to the west and northern sides of the principal island, of which Verlatens or Forsaken Island at the N.W. end, and Long Island at the N.E. end, are the largest. The Peak.

A bank of soft mud extends out from the east side of Crockatoa and Long Island about 3 miles, when the peak bears W.S.W. to S.W. by W., affording excellent shelter from westerly gales, by anchoring in from 20 to 23 fathoms about 1½ to 2½ miles off shore. The peak bearing S.W. by W. is the best berth; but a ship should not anchor with the north end of the island to the southward of West, or she will be exposed to a heavy sea rolling in from the westward between Crockatoa and Pulo Bessy, during a westerly gale. The Princess Amelia, with the fleet from China, took shelter here December 28th, 1815, and remained till the 4th January, 1816, in smooth anchorage, during a continued gale from the westward; while a Swedish ship was driven into Welcome Bay, and rode with two anchors, against a very heavy sea. On the north-east end of Long Island a swamp was found, with apparently a little rain water, as no spring was discovered: a small spring of fresh water was found on Crockatoa, opposite the south end of Long Island, but it could only be approached by boats at high water; directly abreast of Long Island, on the north-east side of Crockatoa, a hot spring was observed, in which the thermometer rose to 154°. No inhabitants were seen on these islands, nor any trace of a village, and Captain Balston, of the Princess Amelia, thinks no ship ought to depend on watering at Crockatoa. A wild hog was shot on Long Island, and there are also some small deer on it. Anchorage.

The S. E. end of Crockatoa and east end of Long Island bear N. ¼ E., and S. ¼ W. of each other, forming a bay with a coral reef projecting three-quarters of a mile, and a rock, 2 feet under water, lies nearly a mile off the south end of Long Island. A reef extends half-way across from the south end of Long Island towards Crockatoa, and although regular soundings of 28 to 32 fathoms were found in the channel between these islands, it is too narrow to be navigated by a large ship, and rendered more dangerous by eddy winds: the north end of this strait is fronted by a small island, and a reef of rocks, nearly even with the water's edge, extends from the north-west end of Long Island, above half a mile in a westerly direction towards the north end of Crockatoa.

On the 21st February, 1829, the Moller, one of the Russian corvettes, under command of Captain Lutke, although drawing only 14 feet, touched on a coral patch, said

* As the peak of Crockatoa may be considered the Fairway Mark in entering the Strait of Sunda from the westward, its latitude ought to be correctly known, and although the latitude stated here is thought to be near the truth, being the result of correct observations taken by Captain Lestock Wilson, corresponding with those of several navigators; yet, other officers, esteemed careful observers, differ more in the latitude of this peak than could have been expected in a period of improved nautical astronomy. Captain T. Lynn made the peak, by observation, in lat. 6° 12′ S. (*a*). Captains Miliken, Craig, and Bampton, made it in 6° 10′ S., and some Dutch charts place it in the same latitude. I made it in lat. 6° 9′ S., by indifferent observation. Captain L. Wilson made it in lat. 6° 8′ 3″ S., Captain Balston in 6° 9′ S., Captain Denniston in 6° 7′ S., and Captain W. Owen, of the Royal Navy, made it only in lat. 6° 3′ S., or 9 miles less than Captain Lynn's observation, although these two officers are known to be careful observers, and good nautical astronomers.

(*a*) Captain Lynn, afterwards, in 1817, made it in lat. 6° 8′ S. Captain Hamilton, in 1820, made it in lat. 6° 9′ 42″ S. Captain Ashmore, in 1827, made it in lat. 6° 7′ 59″ S. Some navigators think the peak should be placed 2 or 3 miles to the N. N. W. of the position above stated.

to be $1\frac{1}{4}$ miles from the nearest point of Crockatoa and S. E. from the isle that lies off its N. E. point: but the description of its position, being given rather ambiguously is not satisfactory.

Pulo Bessy.

PULO BESSY, or TAMARIND ISLAND, bearing about N. E. $\frac{1}{2}$ E. from Crockatoa Peak, distant $3\frac{1}{2}$ or 4 leagues, has also a high peak resembling a sugar-loaf, in lat. 5° 57′ S., and 3 miles East of Crockatoa Peak, and is sharper than the latter: some islets and rocks join the north end of the principal island, but it is bold to approach in most places, having 11 and 12 fathoms regular soundings near the north and east sides, and 16 or 17 fathoms near the western part. In February, 1821, when blowing strong from S.W. by W., the General Kyd ran under Pulo Bessy, and anchored in 13 fathoms, mud and sand, off shore about 2 miles, with the Peak bearing W. by S., and had smooth water.

Channel between it and Crockatoa.

The channel betwixt this island and Crockatoa having regular soundings from 18 to 28 fathoms, mud, and being about 2 leagues wide, where ships can occasionally anchor to stop tide, or otherwise, it is often preferred to the channel betwixt the latter and Princes Island, particularly by ships working out against the westerly monsoon.

Hindostan Rock.

The HINDOSTAN ROCK, on which the ship of this name struck in 1791, is the only known danger; it is of a spiral form, being only 6 or 8 feet in diameter, with 15 feet water on its summit, and 10 fathoms close to. About half-way between it and the *bushy* S. E. point of Pulo Bessy, the depths are 8 and 10 fathoms, and it is distant from the south end of this island about $1\frac{1}{2}$ miles. When upon the Hindostan Rock, Crockatoa Peak bore S. 15° W., the west extreme of Verlatens Island S. 45° W., the East extreme of Long Island S. 2° W., Pulo Bessy from N. 44° E. to N. 2° W., the peak of Keyser Island W. 12° N., and Zee Klip, or Gap Rock, W. 5° N., well open to the southward of Keyser Island.

Zee Klip.

ZEE KLIP (Sea Rock) is a small group, consisting of two or three steep pyramidal rocks, and lying about 5 miles to the westward of the south end of Pulo Bessy; the largest of these, having a cleft in it, is called sometimes Gap Rock.

Directions to avoid the Hindostan Rock.

To avoid the Hindostan Rock, a ship ought to keep at least 2 miles from the south end of Pulo Bessy, but the best mark in proceeding through this channel is never to bring the Gap Rock open to the southward of Keyser Island. When the Gap Rock is in one with the south point of this island, it bears W. 12° N.; W. 15° N. when on with the centre; and W. 17° N. when in one with the north point.

The islands on the south side may be approached within $1\frac{1}{2}$ or 2 miles, there being 23 fathoms mud about a quarter of a mile from the north point of Long Island, and 15 fathoms sand within a ship's length of the beach; but a reef of rocks, above water, projects from the N.W. part of the island, half a mile or more to the W. N. Westward.

Pulo Sebooko.

PULO SEBOOKO, or SAMBOORICO, in lat. 5° 53′ S., lies to the N. N. E. of Pulo Bessy, having a safe channel, nearly a league wide, between them, and it is situated nearly mid-way between the latter and the S. E. point of Rajah Bassa Road: it is high, covered with wood, and some islets and rocks lie contiguous to the north and east sides, with good anchorage off the east part of the island, in 10 or 12 fathoms, near the small islets. A reef projects a little way from the south end of the island, and also from the S.W. part, but on the north side there are 30 fathoms water

between it and the Three Brothers, which passage seems to be safe, although not frequented.*

THWART-THE-WAY, or Middle Island, called Pulo Renyang by the Malays, situated in the middle of the narrowest part of Sunda Strait, but rather nearer Hog Point than to the Java shore, is of considerable size, being 4 miles long, and is moderately elevated; it lies about 7 leagues to the eastward of the islands last mentioned, the N. E. end being in lat. 5° 55½′ S. and 1° 1′ W. from Batavia by chronometers, or in lon. 105° 51′ E. A reef projects a little way from the south side of it, and the bottom is generally rocky near this island, with inconvenient depths for anchoring; there being from 40 to 60 fathoms about a league to the northward of it, but less water near its south and S.W. sides. Thwart-the-way. Position.

The channel between Thwart-the-way and Sumatra is much frequented in the westerly monsoon, by ships from Banca Strait bound to the westward, being shorter, although more contracted than the other channel betwixt Thwart-the-way and Java. The northern channel may be adopted with a steady wind, for in such case, with the westerly current, a ship will get speedily through; but in light baffling winds, she is liable to be drifted about by strong tides or currents near the Stroom Rock, where is no anchorage except in deep water from 40 to 60 fathoms. Channel between it and Sumatra.

STROOM ROCK, about 1½ or 2 miles to the N.W. of Thwart-the-way, is a group of three or four rocks, visible above the sea at high water, and then discernible only at a short distance; at other times it appears about the height of a long boat. Although the passage betwixt this rock and Thwart-the-way is safe, the channel to the northward is preferable, by keeping within 1½ miles of the Zutphen Islands when the wind inclines from the Sumatra side, and giving a berth to the Rock off Hog Point. The Stroom Rock, Button, and Bantam Point, are nearly in one, bearing E. 10° N.: when in one with the northern extreme of Thwart-the-way, it bears E. by S. ½ S., and when on with the S. Western extreme of that island, it bears S. E. by S. Stroom Rock. Directions.

There is a rock, marked "doubtful" in the Admiralty chart of Sunda Strait, about 2 miles to the northward of the Button, on which the American ship Claudius is said to have struck. Captain Winsor, of that vessel, gives the following bearings for it. The Button S. by E. 1½ miles; Thwart-the-way S. W. about 5 miles.†

SOUTH SIDE OF SUNDA STRAIT, WITH DIRECTIONS FOR BATAVIA.

PRINCES ISLAND, or PULO PONTANGH, separated from the west part of Java by a channel about 4 miles broad, is the largest island at the entrance of Sunda Princes Island.

* Captain George Creighton, of the ship Cordelia, being becalmed near this island in February, 1837, mentions having seen "a reef trending in a N. W. direction to a considerable distance," off a point, which he supposed to be the west point of Sebooko; a cluster of rocks being also visible off its N.W. point, distant 1½ or 2 miles from the island. When the northernmost of the Three Brothers was on with this cluster of rocks bearing N.E., Saradong Island bore N.N.W. and Treeless Rock S.S.W. ½ W.—(*Naut. Mag. for* 1837, *p.* 570.)

† Naut. Magazine for 1838, p. 152.

Strait, being 18 miles long, from N. E. to S.W., and 10 miles broad; the north end is in lat. 6° 27′ S., the peaked hill at the S. E. side in lat. 6° 35′ S., lon. 105° 15′ E., or 1° 37′* West from Batavia, by my chronometers, and it is about 4 miles to the eastward of Java Head. The middle of the island is hilly, but in some parts, particularly at the west end, the land is level and low fronting the sea, and all the island abounds with wood. A reef projects from the west point, betwixt which and the south point of the island an extensive bay, called Casuaris Bay, stretches a great way inland, having soundings of various depths, and anchorage at its upper end; but being open to the S.W., it is not frequented, and is consequently little known. The north side of the island has soundings from 20 to 12 or 10 fathoms near the shore, but the anchorage is destitute of shelter, and too near the land for ships to lie in safety.† With the peaked hill on the S. E. part bearing from S.W. to N. N.W., there is anchoring ground in 36 to 44 fathoms about a mile off the eastern shore; and with the same hill bearing from N. ½ W. to W. by N., there are from 10 to 30 fathoms coarse sand, shells, and coral, little more than a cable's length off shore. The common anchorage is on the east side the island, with the hill bearing about S.W. by W., and the northern extreme N. ½ E., in 38 fathoms, fine sand, about three-quarters of a mile off shore; but as this road is inconvenient for watering, the Peaked Hill may be brought to bear about N.W. by N., where a ship, in want of water, should anchor in 35 fathoms, soft ground, about half a mile from the shore. Here is a small sandy bay, and at its eastern part a run of fresh water, where the casks must be filled about 100 yards up, the higher the better, otherwise the water will be brackish. It is only during the westerly monsoon that ships can conveniently procure water here, for the springs are nearly dry in the S. E. monsoon, when there is little rain; the strong winds also, which blow in this season over the west part of Java, render the anchorage at the East of Princes Island unpleasant, it being then a lee shore.

Anchorage.

Dangers.

From the N. E. end of the island a reef extends along the shore on each side; some rocks and breakers also lie at the S.E. side of it, in a bay to the S. Westward of the peaked hill; but the rocks called the CARPENTERS are most in the way of ships passing betwixt Java and Princes Island. These are a group of large rocks projecting from the south point of the island nearly a mile, having no anchorage near them, there being 50 fathoms close to, and about two ships' lengths from them no ground.

Princes Strait.

PRINCES STRAIT, the BEHOUDEN, or Safe Passage of the Dutch, formed between Princes Island and Java, is the small or southern channel leading into Sunda Strait; it was formerly much frequented, and recommended as the best passage, both to enter and depart from that strait; and although still chosen by many ships, the preference is now generally given to the great channel betwixt Princes Island and Crockatoa, or to that between the latter and Tamarind Island, with a steady fair wind, unless a ship intend to water at Mew Bay, which is more convenient than Princes Island for that purpose.

First Point.

FIRST POINT of Java, or TANJONG ALONG-AJANG, is the south point of the entrance of Princes Strait, easily known by a remarkable rock off it, called the FRIAR, that lies nearly S. E. by S. about 5 miles from the Carpenters, which bound

* Captain L. Wilson made the Peak 1° 38¾′ West from Batavia by chronometers, or 1¾ miles more than stated above.

† Commander R. Collinson, R.N., in a letter dated 7th July, 1840, states, that the N.W. extreme of Princes Island, as given in our present charts, is estrended 3 miles too far in that direction.

the other side of the strait. The west end of Java extends 5 leagues about N. N.W. and S. S. E., and is a steep high land, projecting a little to the northward of the middle part, which is generally considered as Java Head, already mentioned in the first volume of this work. The First Point is in lat. 6° 44′ S., distant nearly 2 leagues to the northward of the Head, and the coast between them, which forms a bight, is fronted by high rocks in some places stretching out about a mile. On these rocks, also on the Friar, and Carpenters, the sea breaks high during westerly winds, or in bad weather.

Ships proceeding through Princes Strait, in the N.W. monsoon, should keep near to Princes Island and the Carpenters, particularly in working out against westerly winds; a current will then, sometimes, be found setting out in their favour. During the other monsoon, when S. E. and southerly winds prevail, they ought to keep nearest to the Java shore, and the Friar, which rock may be approached within 1 or 2 cables' lengths, with a steady southerly wind. Directions.

A ship may sometimes get quickly out to the westward through Princes Strait in the N.W. monsoon, during squally weather, when it would be difficult to beat out to the northward of Princes Island. Captain John Cowman, in the Magdalen, beat out through this strait against a westerly gale, by carrying a press of sail, and tacking between the squalls, at a time when the heavy sea made it impossible to tack the ship in the Great Channel between Crockatoa and Princes Island; notwithstanding, he was only 36 hours from North Island until clear out of the strait, while other ships from China anchored for shelter under Crockatoa. The Elphinstone, of 1,200 tons burthen, Captain Milliken Craig, bound to China, entered Princes Strait in the afternoon of the 3d of August, and passed through it in the night without anchoring.

MEW ISLAND, in lat. 6° 43′ S., called also CANTAE, situated in Mew Bay, about a league eastward of the First Point of Java, is small and hilly, abounding with wood; betwixt it and the First Point there is an islet near the Java shore, and regular soundings over a sandy bottom are found to stretch along this side of Princes Strait. There is a safe but narrow channel betwixt Mew Island and Java, with various soundings from 5 to 8 and 10 fathoms, over a sandy bottom, nearest to the island, where a ship may lie land-locked, and be sheltered from all winds. South, from the body of the island, but nearest to the Java shore, there is a rocky shoal, which is avoided by keeping nearest to the island; and in every other part, a little nearer the island than mid-channel, is the best track for vessels passing through, or taking shelter here. The shore is rocky on the outside of Mew Island, but safe to approach; the soundings decrease gradually to 8 or 9 fathoms. On the Java shore, to the eastward of the island, there is an excellent watering place, during the southerly monsoon, being then preferable to that at Princes Island, where the wind blows upon the shore, and the water is sometimes scarce: whereas, here the water pours from the rocks in great abundance, and is of superior quality to that of Anjer, North Island, or the Nanka Islands. Mew Island. Watering Place.

A ship proceeding to the watering place at Mew Island must give a berth to a reef of rocks, which bears about N. by W. nearly half a mile from the watering place. She may run betwixt it and the island, borrowing towards the latter, and anchor in 10 or 12 fathoms inside, in the channel formed between the island and Java; or she may anchor farther out in 14 fathoms water, over a bottom of fine sand, with the peak on Princes Island N. 13° W., the extremity of Mew Island W. 8° S., distant from the Java shore about $1\frac{1}{4}$ miles, and from the watering place $1\frac{1}{2}$ miles. The Royal George, Anchorage.

at anchor in 18 fathoms, had Princes Peak bearing N. 15° W., north extreme of Princes Island N. 2° W., north extreme of Java N. 42° E., southern extreme of the Carpenters N. 70° W., Mew Island from S. 15° W. to S. 88° W., distant half a mile, and the Watering Place S. 21° E., distant $1\frac{1}{4}$ miles. This ship and the Thames watered here, March 26th, 1813. H. M. ship Grampus, with the fleet from China, also watered here, May 1st, 1811. When the William Pitt watered here in May, 1820, the wood had grown over the cascade, so that it could not be perceived at high water, but was found by the noise of the water falling into the sea.

Mew Island is not inhabited, but ships touching there sometimes procure a small supply of turtle, fowls, and coco-nuts, at an exorbitant price, from the people of Princes Island, who bring them over in their proas. Plenty of wood may be got upon the island, or on the opposite shore of Java, near the watering place, but the shore party ought to be on their guard against hidden assault from the natives. The water is clear and good, and falls in a cascade from the land, upon the beach; with the assistance of a hose, it may be filled into boats without landing the casks. Inland, a considerable way from the watering place, are some huts or villages, but none contiguous to the sea on this part of the coast.

Water.

Tides.

It is high water here, at about 6 hours on full and change of the moon.

Second Point.

SECOND POINT, or TANJONG GOOKOOLANG, in about lat. 6° 36′ S., and 3 leagues N. Eastward from Mew Island, may be approached to 15 or 16 fathoms, about $1\frac{1}{2}$ or 2 miles' distance; and a ship may keep in moderate depths for anchoring, in passing along the coast between them, there being no danger unless near the shore. On the east side the point, Welcome Bay extends a great way into the land, containing several islets and shoals; the outermost of these shoals extends E. N. E. and W. S. W. about two cables' lengths, and is half that breadth, having only 9 feet water on it in some places. From this shoal, the Second Point is said to bear W. N. W. about 5 miles, then on with the northernmost peak of Princes Island, and the Third Point N. E. $\frac{1}{2}$ E.* About a cable's length outside of it there are 19 fathoms water, so that care is required not to stand into the bay, in working, when near this shoal; with a fair wind, a direct course should be steered from the one point to the other, without borrowing into the bay. The eastern side is more clear, with good shelter in the S. Easterly monsoon, but in the westerly monsoon this bay ought to be avoided.

Third Point.

THIRD POINT, or TANJONG LUSSONG, in lat. 6° 27′ S., separates Welcome Bay from Pepper Bay, the latter being on the east side of this point, and bears nearly N. E. by E. about 4 leagues from the Second Point. To the eastward of the point, there is an islet inside of Pepper Bay, with shoals to the north-westward, rendering the approach to it dangerous; much caution is necessary in the navigation of this bay, throughout, as the water is generally shoal. A ship being abreast the Third Point, about a league distant, the small island Seriguy or Pulo Papale, in the N. E. part of Pepper Bay, may be seen bearing about E. by N., but will then appear as part of the contiguous coast; to touch here, it will be prudent to steer across the bay, keeping the island on the starboard bow, and not borrow towards the shoal water near the Java shore. A ship may anchor about 2 or 3 miles from Seriguy in 7 or 8 fathoms, with it bearing about S. S. E.; refreshments may be procured from the village on the main,

Anchorage at Seriguy.

* By Admiralty chart, N. E. $\frac{1}{2}$ N.

but at high prices. A reef projects from the island about a mile to the northward, and stretches from thence to the Java shore.

FOURTH POINT, or TANJONG CIECORANG, about 4½ or 5 leagues N. ½ E. from Seriguy, is low to seaward, and most part of the coast betwixt it and Welcome Bay is low, interspersed with hills in some places, and abounding with coco-nuts. In coasting along betwixt Seriguy and the Fourth Point, a ship should keep about 3 miles or more from the shore, in soundings from 20 to 30 fathoms, to be enabled to anchor, if calms and contrary currents render it necessary. About half-way from Seriguy towards the point, it would be imprudent to borrow too near the shore, for reefs stretch out nearly a mile in some places: and from the Fourth Point a reef projects about a mile, with 20 fathoms almost close to it. Near the same point there is said to be a reef of rocks adjoining the shore, and a sand-bank stretching off from the reef about half a mile, on which the Catherine was lost.* From the outside of it, in 12 fathoms water, the Button bears N. N. E. ½ E., Thwart-the-way N. ½ E., Crockatoa West, and the nearest part of the Java shore S. E. by E., about 2 or 2½ miles. Fourth Point.

Having entered by Princes Strait, and being abreast the Second Point, a vessel should steer a direct course for the Fourth Point, bearing nearly N. E. from the former, distant about 13 leagues; or having entered by the great channel, to the northward of Princes Island, a course should be steered for the same point, if it be intended to stop at Anger Road, or at Batavia: for it will be prudent to keep near the Java coast during the southerly monsoon, and pass betwixt it and Thwart-the-way, whether bound to Batavia, or Banca Strait. From the Second Point to the Fourth Point there is generally good ground for anchoring occasionally, in 18 to 25 or 30 fathoms. To sail from the Second Point to the Fourth Point.

ANJER VILLAGE, in lat. 6° 3′ S., lon. 105° 55′ E., about 2 leagues eastward of the Fourth Point, is not easily perceived in coming from the westward, being situated in a bay, where the houses or huts are scattered amongst the coco-nut trees, and nearly obscured by them, and by the chain of hills inland. The easternmost of these is a sharp peaked hill, called Anjer Peak, directly over the village, and is on with it bearing S. S. E.; from the S. W. point of Thwart-the-way the village bears S. E., and from the eastern extreme of the same island it bears S. S. E. ¾ E. Ships frequently touch at this place in the southerly monsoon to procure refreshments; but the road is not considered safe nor convenient in the opposite season, for it is *then* dangerous landing, on account of the high surf. There is much surf sometimes, even in the southerly monsoon, for on May 20th, 1820, the Company's ship William Pitt anchored here, and could not procure any supplies without waiting two days, until they could be brought from the country; and finding it impracticable to get fresh water from the shore, on account of the heavy swell rolling into the road, she proceeded to Mew Bay to fill up her water. The Company's ship Charles Grant, bound homeward from China, anchored at Anjer, April 10th, 1826, and on the following morning parted from all her anchors in a hard gale from the westward, was driven on the rocky shore, and Anjer.

* By this ship's journal, it appears that she struck on a sunken rock about 2 miles off the shore at the Fourth Point, between 11 and 12 A. M., September 20th, 1716, where she bilged, but floated off, and was run on shore to save the treasure, and part of the cargo. Captain Hunter, of the Catherine, went with the treasure in the long-boat to Batavia, and the governor gave every assistance, by sending sloops to take out the cargo, which was carried to Edam Island. The Javians afterwards burnt the hull of the ship to procure the iron.

did not get off till the 16th, after having lightened the ship, and with the loss of her rudder, and otherwise sustaining great injury. This shews that Anjer Road is not safe in the month of April, and should be avoided by the homeward-bound ships. Buffalos, some hogs, poultry, vegetables, and frequently turtles, may be procured here; water may be had by employing the shore boats. The common anchorage in Anjer Road is in from 9 to 14 fathoms abreast the village.

Anchorage.

Betwixt the Fourth Point and Anjer Road the soundings are irregular and the coast steep, the depths from 30 to 35 fathoms about 3 miles off, decreasing to 8 and 10 fathoms about half a mile from the shores of Anjer Bay.

Cap.

SMALL CAP, called Pulo Oolar, or Snake Island, by the Malays, is a little round isle, bearing N. N. E.* from Anjer village about 4 or 5 miles, and nearly E. S. E. from the south part of Thwart-the-way; between it and the latter island is the proper channel, having various depths in it from 20 to 50 fathoms, over an uneven and generally rocky bottom. There is a passage betwixt the Cap and the Java shore, but ships do not proceed through it, on account of Brouwer Sand bounding it to the eastward.

Button.

BUTTON, or GREAT CAP, in lat. 5° 53′ S., and 2 leagues North from the Small Cap, of similar appearance, but larger and higher, is steep and covered with small trees. From Anjer Road, nearly to St. Nicolas Point, there is anchorage in 20 to 16 fathoms by borrowing towards the Java shore; but outside, the depths being great, and the bottom unfavourable for that purpose, ships are liable to be drifted about by the strong tides, if the wind fail them, for the tide runs through this narrow part of the strait with great velocity during the springs. Betwixt Thwart-the-way and the Java shore, and off the Button, the tides or currents set generally strong through the strait to the S. Westward in the south-east monsoon; and in the opposite direction during the westerly monsoon.

Tides.

Brouwer Sand.

BROUWER SAND bounds the channel on the inside, and stretches a considerable way parallel to the coast of Java, having an islet and a small passage between it and the shore; it is a dangerous shoal, steep to seaward, there being deep water very near it on the outside. When the Harrison's boat was on it in 1½ and 2 fathoms water, the Cap bore S. W. ½ S., Thwart-the-way W. by N., the Button N. W. ½ N., the point of an island near the shore, supposed Pulo Merak, which shut in Bantam Point, N. by E., and an isle close in shore, or Little Pulo Merak, E. N. E. To avoid this shoal, a ship should keep nearly in mid-channel between the Button and the Java shore, taking care not to bring the Cap in a line with the point on the west side of Anjer Bay, generally called Anjer Point, or Fourth Point.

Pulo Merak.

PULO MERAK, KETCHEEL, or Little Pulo Merak, lies near the shore abreast of the north end of Brouwer Sand; and PULO MERAK BESAR, or Great Pulo Merak, to the northward of it. Between the latter island and the main, is Merak Harbour, about a quarter of a mile in extent, and having irregular soundings from 6 to 18 fathoms water in it; it was surveyed by Captain Bayley in His Majesty's sloop Baracouta, in September, 1812, and seems to afford good shelter for small ships.

Bantam Point.

BANTAM POINT, or ST. NICHOLAS POINT, in lat. 5° 52′ S., lon. 106° 2′ E.,

* In some charts N. ½ E.

or 50 miles West from Batavia by chronometers, is a high, bold headland, and bears from the Button E. by N., distant 7 or 8 miles. Close to the shore, on each side of it, there are some small islands, Pulo Tampasa to the S.W., and Pulo Saleyra in the bay on the east side: the soundings off this part of the coast are mostly regular, and ships may anchor in some places in 20 fathoms, clay or sand, about 2 or 3 miles from the point; but it appears that the depths do not decrease regularly close to this point, for the Scaleby Castle had 38 fathoms, hard bottom, with it bearing South, distant one mile, where 18 fathoms is marked in some charts, and even 12 fathoms in the Dutch charts.

The coast between it and Anjer is high, with indifferent anchorage in the channel until Bantam Point is approached; but there are spots between it and the Button, where a ship may occasionally anchor to stop tide, particularly towards the Java shore, where the depths decrease in *most* places.*

PANGORIANG, a small place about 4 miles to the eastward of Bantam Point, has a small rivulet of good water and convenient anchorage, where ships may easily procure a supply of that article, and other refreshments may be got at times: this place was frequented by H. M. ships when Java belonged to the British Government, and the anchorage is in from 10 to 16 fathoms. December 7th, 1812, Captain Owen, in H. M. S. Cornelia, anchored in 13 fathoms, mud, with Ejow, or Rajah Bassa Peak, bearing W. 10° N., Bantam Point W. 2° N., Pulo Saleyra, or Roben Island, W. 3° S., Goonong Laoo, or the highest hill near the ship, S. 18° W., Pulo Kaly S. 26° E. to S. 45° E., Great Pulo Mady S. 64° E., Pulo Pontangh S. 68° E., centre of Pulo Baby N. 72° E., and the watering place S. 33° W., off shore about 1¼ miles. Pangoriang.

Pulo Kaly are two small islands, having a passage of 4 fathoms within them, affording good shelter for small vessels; they lie about half-way between Pangoriang and the red arid bluff extreme that forms the west side of Bantam Bay; from whence, all the shore is rocky to the sandy bay of Saleyra, on the S. E. side of Bantam Point. Pulo Saleyra, fronting this bay, is low and woody, with a sandy beach, having 2 fathoms water inside of it, and 22 fathoms near it on the outside.

A ship sailing from, or being abreast of, Anjer Road, should steer to pass outside the Cap and inside the Button, at any discretional distance from either, taking care not to borrow too close to Brouwer Sand in passing; when clear of that shoal and the Button, she may steer N.N.E. for the Two Brothers, if bound to Banca Strait; or to pass Bantam Point within 2 or 3 miles, if bound to Batavia or Bantam. To sail from Anjer to the eastward.

THE TIDES in the narrow part of Sunda Strait are greatly influenced by the winds, and frequently resemble currents more than regular tides. In Anjer Road the ebb sets often from 1 to 2 miles per hour to the westward, during the south-east monsoon; continuing to run sometimes about 14 hours, with a slack or flood of 6 hours. Off Thwart-the-way and the Button, in the same season, it often runs 14 hours at a time to the south-westward, from 2 to 3½ miles per hour: then changes, and sets to N.W. and northward, with much less velocity. At other times the ebb sets about 6 hours to S.W., and the flood 6 hours to the N.E., with nearly equal velocity, about Tides and currents.

* With the Button bearing W. ¼ N. 2 miles, we anchored in the Anna in 28 fathoms, to stop tide during the night, and had 20 fathoms nearer to the Java shore. At another time, we anchored in the night in 37 fathoms, with the Button bearing S. by W. ½ W., but here the ground was hard.

3 or $3\frac{1}{2}$ miles per hour, when strongest on the springs, which we experienced in the Anna, in July and August.

During the westerly monsoon, betwixt Java and Thwart-the-way, the tide has also been found to run 3 and $3\frac{1}{2}$ miles per hour when at its greatest velocity, the ebb 6 hours to the S.W., and the flood the same length of time to the N. E.; but during strong gales from the westward, the flood frequently runs longest into the strait. In this season, the tide or current on the opposite side the strait slants off from the Sumatra coast about the Zutphen Islands, towards the middle of the strait, or the Java shore; and from December to February, the ebb tide along the Sumatra coast, between North Island and Hog Point, has been experienced to run generally to the southward from 4 o'clock in the morning until 6 in the evening, and the flood weakly to the northward during the night. In February and March, a rapid current of 4 to $4\frac{1}{2}$ miles per hour sets sometimes in among the Zutphen Islands to the W. S.Westward, or round them towards Hog Point, which requires great caution in ships passing those islands, or between Hog Point and the Stroom Rock.

Bantam Bay.

BANTAM BAY, about $2\frac{1}{2}$ leagues to the south-eastward of Bantam Point, is extensive, containing several islands; of which Pulo Panjang, a long flat island, covered with trees, in the west part of the entrance, is the largest. A ship may pass on either side this island, if bound to the anchorage at Bantam, but the eastern channel between it and Great Pulo Mady is preferable, having 8 or 9 fathoms water, and is much wider than the western channel, which is formed between the point that bounds the west side of the bay, and the west end of Pulo Panjang; the depths in it are 6 and 7 fathoms. If a ship pass through this channel, she must give a berth to a reef that projects from the south side of Pulo Panjang, and others which extend from the small islands in the western part of the bay. If she enter by the channel to the eastward of Pulo Panjang, Bantam Hill, of round form, will be seen, which is on with the town bearing S. S.W.; and when the flagstaff of Bantam bears S. S.W., it is open a little to the westward of Little Pulo Mady: with either of these marks on, she may steer for the town, passing on the west side of Great and Little Pulo Mady, and anchor off the town in 5 or 6 fathoms, mud. There is a passage to the eastward of these islands, but the channel betwixt them and Pulo Panjang has the deepest water. Pontangh Point is bluff, and forms the east side of Bantam Bay, from which a reef projects far to seaward, with a regular decrease of depth towards its outer edges. The perpendicular rise and fall of tide is 5 or 6 feet in Bantam Bay.

Tides.

Pulo Baby and islands to the eastward.

PULO BABY extends about 4 miles nearly East and West; its west end is in lat. 5° 48′ S., and bears from Bantam Point E. by N. $\frac{3}{4}$ N., distant 13 miles. This island is woody and bold to approach, excepting the east end, from which projects a reef. About 5 leagues nearly East from it lies the westernmost island of the group called Hoorn Islands; this is the largest of the group, and is called Pulo Tidong, or Wapen Island, the west end of which bears about N. $\frac{1}{2}$ W. from Maneater Island, distant 4 leagues; and to the south-eastward of these the Great and Little Cambuys are situated. Pulo Baby and these islands, with their adjoining shoals, bound the north side of the passage leading to Batavia; and the shoals which stretch along the Java shore, from that off the east point of Bantam Bay, to that projecting from Maneater Point, bound the opposite side of the passage. The coast of Java, in this space, is low near the sea.

Maneater Island, situated near the N.W. end of the shoal of that name, which extends a great way out from Java, is level and low, and bears from the west end of Pulo

Baby E. 29° S., distant about 7 leagues, and 5 or 6 miles W. S. W. from the Great Cambuys. There is a conspicuous tree on the latter, and both it and the Little Cambuys are moderately elevated.

DIRECTIONS FOR BATAVIA.

A SHIP bound to BATAVIA, being abreast of Bantam Point, about 3 miles distant, ought, with a fair wind, to steer about E. by S., to pass mid-channel between Pulo Baby and the shoal projecting from the east point of Bantam Bay; and the same course continued will carry her in the fair channel towards Maneater Island, if not affected by an oblique tide, which generally sets nearly East and West along this part of the coast: but if the wind is off the land, a course a little more southerly may be requisite. The best track is to keep in 14 and 15 fathoms when a ship is under sail during the night, taking care not to borrow under 12 fathoms towards the Java shore, nor to deepen above 18 fathoms in the offing. For strangers to run in the night, it may sometimes be imprudent; but they can never be at a loss for anchorage after reaching Bantam Point, there being moderate depths for that purpose from hence to Batavia. Passage from Bantam Point towards Batavia.

When the Great Cambuys is approached, the channel becomes contracted, and bounded by shoals, which ought to be passed only in day-light: one of these has 16 feet water on it, and is about the size of a ship; the west end of Pulo Tidong bears from it N. ½ E., and the east end N. N. E. ½ E., Great Cambuys E. S. E. southerly.

There are several dangers, called Ostrich Shoals, hereabout, the S. Easternmost of which is a rock, with a cross placed on its centre, in 15 feet water; Maneater Island east point bearing from it S. ½ W., the Great Cambuys north point E. by S. ¼ S., and Cambuys Reef Cross E. S. E. ¼ S., which is No. 21 in the List of Sea Marks, consisting of crosses and beacons, placed on the shoals by the government of Batavia, in 1832: and the cross on the south-east rock, mentioned above, is No. 22. These crosses and beacons are 12 feet above water, painted white, and, according to the Tabular List of these sea-marks published at Batavia in 1832, may be seen 4 or 5 miles in clear weather.

There are various channels amongst the islands from hence to Batavia, but that adjoining the coast of Java is most frequented by ships of moderate size.

THE OUTER CHANNEL is on the north side the Great and Little Cambuys, and a ship intending to adopt it should keep within a mile of the great one, to avoid the shoals to the northward, nor ought she to approach the east end of the same island under half a mile, it having a projecting spit. After passing these islands, she must edge to the southward until they are on with each other, then steer about E. N. E. for the small island, called Pulo Dapour, or Duffen's Island, keeping it a little on the starboard bow. By steering towards it, she will pass betwixt two shoals, separated about 1½ miles from each other, on which beacons have sometimes been placed; it will, however, be prudent to keep a boat a-head sounding, if unacquainted, for the shoals have not always beacons; the depths in this track are generally about 12, 13, and 14 fathoms. Having passed Pulo Dapour on the south side, she must steer to the E. S. Eastward for Edam, to enter Batavia Road by the great channel, leaving Edam and Enkhuysen to the eastward, and Haerlem and Hoorn Islands to the westward. When Edam Island is approached, the depths will be 10 or 11 fathoms, and a course Outer Channel.

about South should then be steered, to pass betwixt Hoorn and Enkhuysen; when clear of these islands, the dome of Batavia church may be brought to bear S. $\frac{1}{4}$ E., and this bearing continued will carry a ship betwixt Rynland Shoal and the Eastern Reefs directly to the road, among the shipping.

Ships do not always pass to the northward of the Cambuys, when proceeding to Batavia Road by the Great Channel, for some ships pass to the southward of them, then steer to the eastward on the north sides of Middleburgh, Amsterdam, and Haerlem: the shoals which lie contiguous to this track are next the north side of Middleburgh, and to the N. Westward of that island; in passing which a boat should be kept a-head to sound, by those who are strangers to the channels.

Wrange Rock, one of these dangers, has a cross, No. 19, on its west point, in 12 feet water, Middleburgh south point bearing from it S. E. by E. $\frac{1}{2}$ E., and Pulo Dapour N. E. $\frac{1}{2}$ N.

Betwixt the Great and Little Cambuys there is a safe passage, through which we came in the Atlas; having in running from Pulo Baby with the land-wind in the night got too far from the Java shore, in soundings from 18 to 22 fathoms; we stood along the north side of Great Cambuys in the morning, kept nearest to the little one in passing between them, and had never less than 10 fathoms. The cross, No. 20, was placed, in 1832, on what is called Middle Rock by the Dutch; the cross is in 12 feet water, nearly mid-way between, and to the southward of these islands, from which the Little Cambuys bears N. E. by E. $\frac{1}{2}$ E., Great Cambuys south point N.W. by W. $\frac{3}{4}$ W. There is a shoal of $2\frac{3}{4}$ fathoms least water, from which the Little Cambuys bears N.W. $\frac{1}{4}$ W., distant $2\frac{1}{4}$ miles, and Edam Island just in sight, open to the northward of Amsterdam and Middleburgh Islands in one.

Inner Channel. THE INNER CHANNEL, leading to Batavia, is called DUTCH CHANNEL, being generally used by their ships; and with proper care it is safe. To proceed through it, a ship should pass between Maneater Island and the Great Cambuys, which can only be done with safety in day-light, on account of the shoals stretching from both these islands. Maneater Shoal projects about a mile to the north-westward, and northward of the island of that name, and $1\frac{1}{2}$ miles to the north-eastward, where the water shoals on the edge of it from 9 to 5 fathoms at a cast of the lead, and then shoals gradually up to the shore. On this part there is sometimes a cross or beacon, which is in one with the south point of the island bearing W. $\frac{1}{4}$ S. Opposite the extremity of Maneater Shoal, the passage is bounded on the outside by a reef projecting a considerable way westward from the west end of Great Cambuys. The cross placed on the west extreme of this reef, in 14 feet water, in 1832, is No. 21 of the list, from which Great Cambuys south point bears E. S. E. $\frac{1}{2}$ S., Maneater Island east point S.W. $\frac{3}{4}$ W. A cross is sometimes seen on another shoal a little detached from the Reef Cross to the westward. Ships proceeding through any of these channels towards Batavia should be careful to avoid the shoals, for the crosses or beacons are liable to be stolen by fishermen, or washed away by the sea during the N.W. monsoon, and not replaced for a great length of time. They are not very conspicuous, consisting only of a single tree, with a small piece of wood in the form of a cross nailed on some of them.

The depths are 9 and 10 fathoms in the passage between Maneater Shoal and the reef off Great Cambuys, and the best track, if no beacons are seen, is to borrow nearer to the former island than to the latter. When past Maneater Island, a direct course should be steered to pass to the southward of Middleburgh Island, bearing from it

about E. $\frac{1}{4}$ S., 4 or $4\frac{1}{2}$ leagues; the coast between them forms a bight, which is safe to approach, the soundings decreasing regularly towards the Java shore; and nearly in the middle of the bight there is a place of some trade, called Songy Lampoon. From 9 to 10 fathoms are the common depths in passing through this part of the channel.

Ontong Java Point, bounding the east side of the bight, is a sloping headland, covered with trees, and surrounded by an extensive shoal or sand-bank, called Ontong Java Reef, which extends a great way out towards the opposite islands. On the northern extremity of the reef, No. 15 cross is fixed in 13 feet water, Haerlem Island bearing from it East, and Middleburgh west point N. by W., betwixt which and Middleburgh Island is the channel, about half a mile broad, with regular soundings from 8 to 10 fathoms. On the reef enclosing Middleburgh, two crosses are fixed, both in 15 feet water, No. 16 and 17 of the list; one of these stands on the S.E. point, and the other on the S.W. point of the reef that projects a little way from the island; but these sea-marks being situated near the shore, are not conspicuous, nor ought this reef to be described as very dangerous to those who keep a proper look-out.

Nearly West from Middleburgh there are some shoal patches bounding the north side of the channel, one of which is distant $1\frac{1}{2}$ miles from the island, bearing West from it: these patches are generally destitute of beacons; but upon the centre of Mynderk Shoal, which lies about 2 miles W. by N. from the west end of Middleburgh Island, there is a cross placed in 12 feet water, Little Cambuys bearing from it N.W. $\frac{1}{4}$ W., and Pulo Dapour N. E. by E.; this is No. 19 of the Dutch list.

To avoid these shoals, keep the flagstaff of Middleburgh, or the south part of that island, at least 3° to the northward of East, until the beacon is seen on the point of Ontong Java Reef; then steer to pass mid-way between it and Middleburgh. At low water, the sea may be sometimes seen to break on Ontong Java Reef, close inside the beacon, it being steep there, and also on the west side; but on the eastern edge, opposite Schiedam and Onrust, the water shoals regularly. Having passed between the Islands Middleburgh and Amsterdam on one side, and Ontong Java Reef on the other, steer to the southward for the Islands Schiedam and Onrust; when abreast of Schiedam, borrow towards Ontong Java Reef, and run to the southward along the edge of it in 5 fathoms, until the passage between Onrust and Kuyper Island is fairly open, in order to avoid a Rock or Knowl nearly in mid-channel, on which many ships have grounded. This knowl is small,* with only $2\frac{1}{2}$ fathoms on its shoalest part, $5\frac{1}{4}$ and $5\frac{1}{2}$ fathoms close to it on the west side, and 6 or 7 fathoms between it and Onrust. There is frequently a buoy upon it, which is sometimes sunk, or taken away.

When upon the knowl, the piles of Onrust are on with the White House of Kuyper Island; when the piles are open a little with it either way, the knowl is avoided.

There seem to be other shoal spots to the northward of this knowl, or between it and Onrust, by the account of Captain Neish, of the Auspicious, which ship grounded on one of them, March 26th, 1816, on her passage from Batavia towards England, with Onrust and Kuyper Island in one; extremes of the former from S. S. E. $\frac{1}{4}$ E. to

* This seems to be what is called Onrust Stone by the Dutch, on which a cross, No. 10, is said to be fixed on its west point, in 9 feet water, Rotterdam Island bearing from it N. N. E. $\frac{1}{4}$ E., Kuyper Island S. E. by S. Another danger, called Mathilda Rock, has a *beacon*, No. 11, on its N. E. point in 12 feet water, from which the S. W. point of Kuyper Island bears S. E., and the east point of Rotterdam N. E. $\frac{3}{4}$ N. Onrust Reef has two beacons, No. 12 on its west point, and No. 13 on its N.W. point, both placed in 9 feet water, and these points of the reef bear N.W. from Kuyper Island; this reef projects from the latter island to Onrust.

S. by W. $\frac{1}{2}$ W., and Ontong Java Point W. by N. $\frac{1}{4}$ N. When aground, had 5 fathoms at the stern, and 3 fathoms at the fore-chains, apparently a soft coral rock of small extent, as the Ganges, drawing more water and sailing right a-head of the Auspicious at the time, passed clear of it. Hove off with the stream anchor, and touched the ground lightly twice after, by which Capt. Neish infers, that the passage between the knowl and Onrust is not safe for large ships, and that the only safe channel is to the westward, between the knowl and Ontong Java Reef.

As the depth decreases gradually on the edge of the flats to the eastward of Ontong Java Point, this is the safe side of the channel when abreast of Schiedam, and a ship may borrow, with care, to $4\frac{1}{2}$ fathoms; at all events, she must not deepen above 5 fathoms in passing the knowl to the north-westward of Onrust, or until the passage between it and Kuyper Island is fairly open; being then clear of the knowl, she must haul over for Kuyper Island, and pass near it on the S.W. side; a beacon, standing on a shoal towards the Java shore, will then probably be perceived, which must be left to the southward in passing.

It is said that the flat has considerably extended from Ontong Java to the eastward, and that the depths in the Inner Channel have decreased, for the ship Good Success had not more than 4 and $3\frac{3}{4}$ fathoms in mid-channel, at low water, in passing through; and in borrowing on the edge of Ontong Java flat, the Castlereagh grounded, January 1st, 1825, at 2 P.M., the east end of Amsterdam Island bearing N. $\frac{3}{4}$ W., and Onrust Island E. S. E. After heaving off the flat, she anchored in 4 fathoms, with Onrust bearing S. E. by E., and the beacon on the Knob Shoal East.

Purmerant Island, situated to the eastward of Kuyper Island, has an extensive rocky reef projecting from it nearly $1\frac{1}{2}$ miles to the eastward, and about half a mile to the southward; on its east point there is a cross, No. 6, fixed in 13 feet water, Hoorn Island, east point, bearing from it N. by E., and the Rotterdam N.W. On the S.W. point of the same reef, cross No. 9 is placed in 9 feet water, the south point of Purmerant Island bearing from it North, and Kuyper Island W.N.W. $\frac{1}{4}$ W.; the sea breaks on some parts of the reef at low water, or when there is much swell.

When a ship has rounded Kuyper Island, and no beacons are seen on Purmerant Reef, nor on Rygersdaal Shoal adjacent to the main, she ought to steer a direct course for the outer part of the shipping in Batavia Road, bearing about S.E. $\frac{3}{4}$ E. from Kuyper Island, distant 2 leagues. In passing along, one or two beacons may probably be discerned on shoal spots towards the Java shore, all of which must be left to the southward; and the depths will generally be from 7 to 5 fathoms, in the fair track. Cross No. 5 is placed in 9 feet water, on the east point of Rygersdaal Shoal, Hoorn Island bearing from it N. N. E. $\frac{1}{4}$ E. and Kuyper Island N. N.W. When the road is approached within 3 miles, a beacon to the eastward may be discerned on Rynland Shoal; this bears from Kuyper Island E. S. E. $\frac{1}{2}$ S., and from the shipping in the road about N. by W., not far distant, which may be left to the northward in standing into the road; and here, a ship should anchor in 4, 5, or 6 fathoms, at discretion, off shore about 2 miles, with the dome of the church from South to S. by W.

To sail into Batavia Road by the Middle Channel.

MIDDLE CHANNEL, through which we passed three times, in the Anna, is very safe, with deeper water than the Inner Channel. To sail into Batavia Road by it, pass to the southward of Middleburgh and Amsterdam, betwixt them and Ontong Java Reef, as already directed; having passed the latter island, instead of hauling to the southward for the Inner Channel between the islands and the main, steer directly eastward for the small Island Haerlem, leaving Schiedam to the southward. When

Haerlem is approached, edge away to the S. E., betwixt it and Rotterdam, and betwixt the latter and Hoorn, keeping nearest to Hoorn, on account of a reef contiguous to the S. E. part of Rotterdam, on the centre of which No. 8 cross is placed, in 15 feet water, Hoorn South point bearing from it E. $\frac{3}{4}$ S. and the west point of Onrust Kerkhof S. $\frac{1}{2}$ W. Having rounded the S.W. point of Hoorn Island pretty close, it is prudent to steer S. Eastward until the dome of Batavia church is brought to bear S. $\frac{1}{2}$ E. or S. $\frac{1}{4}$ E., to give a good berth to Permerant Reef, already mentioned, which projects a great way eastward from the island of that name, and bears about N. by W. $\frac{1}{2}$ W. from Batavia church. The N.W. part of Hoorn should not be too closely approached in passing. There is a cross, No. 7, placed in 12 feet water on the centre of a ledge of rocks near the N.W. part of that island, from which the north point of the island bears E. $\frac{1}{2}$ S., and Rotterdam W. $\frac{1}{4}$ N.

After passing Hoorn, and having brought the dome of the church to bear between S. $\frac{1}{2}$ E. and South, steer direct for it, with either of these bearings, until you anchor in the road; by keeping the dome of Batavia church S. $\frac{1}{4}$ E., it will lead mid-way between Rynland Shoal and the eastern Reefs. The soundings throughout this channel, after passing Amsterdam Island, are generally 9, 10, and 11 fathoms, until the depths decrease regularly near the road.

THE EASTERN CHANNELS, leading to or from Batavia Road, are also safe and convenient. We passed through that formed between Edam, the outermost island, and Alkmaar, the next island to the southward, in regular soundings, 9, 10, and 11 fathoms; and at two other times we passed in the Anna, through the Leyden Channel, leaving the island of that name to the southward, and Alkmaar and Enkhuysen Islands to the northward, in 10 and 11 fathoms regular soundings. The channel inside of Leyden is safe, if a ship keep near the island, to avoid the reefs between it and the main. One of these, about mid-way between Leyden and the Java shore, was formerly an island with trees on it, called Vader Smith; but during the last 50 years, only a reef under water remains in its place, on the N. E. point of which, cross No. 1 is placed in 9 feet water, Leyden Island bearing from it N. N.W. $\frac{1}{2}$ W., and beacon No. 2, W. $\frac{1}{4}$ S. To clear Vader Smith Shoal, a large white house with a red top, bearing S. S.W., will carry a ship into 7 or 8 fathoms in the road. Eastern Channels.

The shoals nearest to Batavia Road, and most in the way of ships approaching it from the northward, are Rynland Shoal and the Eastern Reefs; the latter may be considered as the western extremity of that called Vader Smith, being separated from it only by a small channel. Shoals adjacent to Batavia Road.

The Eastern Reefs are composed of rocks and sand, partly dry at low water spring tides, but there is no break upon them at high water, when the sea is smooth. The northernmost patch of the Eastern Reefs, bearing from Rynland Shoal E. N. E. $\frac{1}{4}$ N., distant about $1\frac{3}{4}$ miles, is called Neptune Shoal by the Dutch, upon the N.W. point of which a cross, No. 2, was placed in 12 feet water in 1832, Leyden Island bearing from it N. E. $\frac{1}{4}$ N., as stated above, and the east point of Hoorn Island N. N.W. $\frac{3}{4}$ W. The westernmost patch of these Eastern Reefs bears S. S.W. $\frac{1}{4}$ W. from Neptune Shoal nearly 1 mile, and E. $\frac{1}{2}$ S. from Rynland Shoal $1\frac{1}{8}$ miles; it is called Pas Op by the Dutch, and Middle Reef by Mr. R. Wise in his plan of Batavia Bay. The cross beacon upon it, No. 3 of the list, is in 12 feet water, visible from Batavia Road, and bears N. E. $\frac{1}{4}$ N. when on with the body of Leyden Island, or nearly in the transit line of the Neptune Shoal; and Hoorn Island bears from it N. N.W. $\frac{1}{4}$ W. About a quarter of a mile N. by E. from the last-mentioned reef, and a little to the westward of

a transit line joining it and Neptune Shoal, there is a small rocky patch, marked by Mr. Wise on his plan of Batavia Bay, which seems not to have been previously known. All ships pass to the westward of these beacons, there being no safe channel to the eastward, for a large vessel, between them and Vader Smith shoal.

Rynland Shoal is rocky, with only 10 feet water on it, and is of round form, about the length of a large ship in diameter. It bears N. by W. from the shipping in the road, distant about a mile, also N. by W. or N. $\frac{3}{4}$ W. from Batavia church; although directly fronting the road, it is at times destitute of a beacon; this was the case *twice* when we were at Batavia, in the Anna. In 1793, a floating beacon, framed of several pieces of timber, and more conspicuous than any of the other beacons, was placed on this shoal. Ships generally pass inside of Rynland Shoal, when they sail through the Inner, or Onrust Channel; but ships sailing to or from the road by any of the northern channels usually pass between it and the beacons on the Eastern Reefs, which passage is safe, with the dome of Batavia church bearing from South to S. $\frac{1}{2}$ E.; or this dome kept S. $\frac{1}{4}$ E. is the best bearing for sailing to or from the road, betwixt these shoals, as mentioned in the directions for approaching Batavia by the outer and middle channels. In 1832, the beacon No. 4 of the Dutch list was placed in 12 feet water on the east point of Rynland Shoal, Hoorn Island bearing from it N. by W. $\frac{1}{4}$ W., and Kuyper Island N. by W. $\frac{1}{2}$ W.

Batavia. BATAVIA OBSERVATORY is in lat. 6° 9′ S., lon. 106° 51$\frac{3}{4}$′ E., by astronomical observations made by Johan Mauritz Mohr, and this longitude is considered to be very correct. By mean of observation of sun and stars on both sides the moon, taken

Position. in three different voyages, I made Batavia in lon. 106° 54$\frac{1}{2}$′ E.; but that of the Dutch astronomer, stated above, is probably nearest the truth. Captain Ashmore, in October, 1822, made it in lon. 106° 51′ 45″ E. by one chronometer, and 106° 52′ 13″ E. by another. H. M.'s S. Curacoa sailed from Bombay May 1st, 1833, and on June 1st, at anchor in Batavia Road, by two chronometers agreeing within 1 mile, made the dome of the church 33° 57′ East of Bombay Castle, or lon. 106° 51$\frac{3}{4}$′ E.

Supplies. Here, a ship may procure all kinds of necessary supplies; poultry, excellent fruits, and vegetables, are plentiful, and sold at moderate prices. The city is spacious, and many of the houses well built; but the low marshy coast around the bay, and the stagnant water in the canals, which intersect the streets, generate noxious vapours, rendering this place very unhealthy at all times to strangers. The most unhealthy time is when the canals have lost much of their waters, about the latter part of the dry season, from September to December. Strangers ought never to sleep on shore, if it can be avoided.*

A few miles inland from Batavia, towards the hills, the country is healthy; and the Europeans who reside there differ much in appearance from those who inhabit the city, for the latter are in general sickly and emaciated.

Trade. Batavia is a place of considerable trade, but all foreign ships must obtain permission from the Shahbundar before they can trade with private merchants. The principal exports are sugar, coffee, spices, &c. The imports, opium, iron, and piece-goods, of various kinds.

Fronting the small river or canal that leads to the city there is a bar, of hard bottom,

* A tea-spoon full of red bark taken in a glass of port wine, or other cordial, at rising in the morning, has been thought an excellent preventive against the damp vapours, which occasion the Batavia fever. I generally used some preventive of this kind, and never slept on shore, during four voyages to this place, and always escaped the fever, which proves fatal to thousands.

mixed with mud, a little way out, on which there is about 2 or 3 feet at low water. The channel for boats to enter the river is to the eastward of the bar, and there is at times a surf upon it at low water, when blowing strong in the N.W. monsoon; strangers ought not then to send their boats to the river, for some small boats have been overset upon the bar, and the people devoured by the crocodiles, which are here of large size, and very numerous.*

Anchorage.

Ships seldom moor in the road, for the anchors are generally buried in the soft mud; small vessels anchor in 3½ or 4 fathoms, about a mile off shore; and large ships in 5 or 6 fathoms, about 1½ or 2 miles off, with the dome of the church from S. to S. by W. If a ship ground on the main, no danger is to be apprehended, the mud flat being very soft; and the rise and fall of tide is not more than 6 feet on the springs. There is little or no variation at present in the road to Batavia, or in the seas adjacent.

Islands fronting the Road.

The small island Edam, the outermost of those opposite to Batavia, is in lat. 5° 57′ S., and bears from Batavia Observatory N. 10° E.; there is a flagstaff upon it, and, like most of the other islands, it is clothed with trees. Hoorn Island bears from the road N. by W.; Onrust is the great marine depôt, where ships are hove down by cranes erected upon the wharfs, when they require repairs; and this small island, being the naval arsenal and dock-yard, abounds with inhabitants.

The N.W. monsoon generally sets in at Batavia and along the coast of Java about the beginning of November, and the subsequent strong winds and heavy rains greatly cool the atmosphere.

FROM BATAVIA AND SUNDA STRAIT TO THE STRAIT OF BANCA.

To sail from Batavia Road.

DEPARTING from BATAVIA, and bound to Banca Strait, a ship should steer out of the road with the dome of the church S. ¼ E. or S. ½ E., which will carry her between the Rynland Shoal and Eastern Reefs: from thence, with the dome of the church from South to S. ½ E., she may continue to steer to the northward, through the Great, or Edam Channel, leaving the Islands Hoorn, Monnikendam, and Haerlem, to the westward; and Enkhuysen, Edam, and the other islands, to the eastward. From Edam, she ought to steer for the South Watcher, or Zuyder Watcher, a small island, in lat. 5° 41′ S., and 8½ miles West from Batavia, by chronometer, bearing about N. W. by N. from Edam, distant 19 miles; it is covered with trees, and may be seen at the distance of 6 leagues: when it is approached within 3 leagues, it should be brought to bear to the northward of N. W., to avoid a small doubtful shoal, called by the Dutch Nasomver Droogte, situated about 2 leagues S. Eastward from the island. Having passed on either side the South Watcher, at 2 or 2½ miles' distance, a course may be steered to the North and N. N.W. for the North Watcher, giving the easternmost of the Thousand Islands a berth of 3 or 4 leagues.

South Watcher.

* A jetty, or wooden pier, has lately been carried out from the canal over the bar.

Thousand Islands.

THE THOUSAND ISLANDS consist of numerous small islands; their greatest extent is nearly N.W. and S.E., and they bound the west side of the passage betwixt the South and North Watcher. The northernmost island is said to be in about lat. 5° 32′ S., and as the southernmost islands, to the westward of the South Watcher, have shoals surrounding them, it is prudent to give a berth of at least 2 or 3 leagues to them in passing. The westernmost isle is considerably detached from the others, and called Pulo Estam, or West Island. Although near to Batavia, these islands seem never to have been sufficiently explored, nor was a safe passage known to exist among them, until Lieutenant J. Harding, of the Royal Navy, July 19th, 1830, discovered a safe channel between several of the westernmost of these islands, and the large group to the eastward. The northernmost islands appeared to be about in lat. 5° 35′ S. by estimation, which is farther South than is marked on the charts. With the wind at E.N.E. at 3½ P.M., perceiving a wide opening in the Thousand Islands, hauled to the S.W., the North Watcher then bearing N.W. by N., and steered through a safe channel about 5 miles wide, leaving four isles, including Pulo Estam, to the westward, and the dense group of the islands to the eastward, the ship in soundings of 16 to 20 fathoms. When in the channel in 16¾ fathoms, Pulo Estam, or West Island, bore W. ½ S., nearest isle to it W. ¼ N., an isle N. by W., another isle N. by E., North Watcher N. ¾ W., an isle E. by N. ½ N., being the northernmost of the dense body of the Thousand Islands, which to the southward of it appeared to be composed of a continuous chain. From this position steered S.W. for Pulo Baby, and the passage seemed to be perfectly safe. In sailing betwixt the North and South Watchers, care is also requisite to avoid the following shoals, to the eastward of the passage, their situations not being very correctly known.

Brewer's Droogte.

Moolenwerf.

Pruysen's Droogte.

BREWER'S DROOGTE, the southernmost of these shoals, is said to be a sand above water, thought to lie in about lat. 5° 22′ S., nearly on the meridian of Edam, and in a N. Easterly direction from the South Watcher. MOOLENWERF, another shoal, thought to be 3½ or 4 leagues to the northward of Brewer's Droogte, is probably the danger seen by the Arabella in 1715, which she made in lat. 5° 11′ S. PRUYSEN'S DROOGTE, said to be dry at low water, and situated 4½ or 5 leagues to the W.N.W. of Brewer's Droogte, may be passed on either side, the depths between them being from 15 to 20 fathoms, and between Pruysen's Droogte and the Thousand Islands to the westward, from 15 to 22 fathoms.

One of these shoals was seen by the Elphinstone, August 27th, 1812. At 8 A.M. the South Watcher bore S. 24° W., distant 5 or 6 leagues; steered N.N.E. 9 miles till noon, when breakers, supposed to be on the Pruysen's Droogte, bore N. 48° W., about 6 miles, but no part of it visible above water. When the breakers on the shoal bore E. 8° S., distant 3 miles, the Alnwick Castle, August 27th, 1812, observed at noon in lat. 5° 17′ S., lon. 106° 53′ E., by chronometers from Batavia. Scaleby Castle, May 22nd, 1815, at 9 A.M., when Pruysen's Droogte bore West 1½ miles, had soundings 12½ fathoms. At half-past 10 A.M., one of the Thousand Islands in sight from the mast-head bearing S.W. ½ S. At noon observed lat. 5° 16′ S., Pruysen's Droogte bearing W. 12° N., distant 5 or 6 miles. The shoal seen by these three ships appears to be one and the same, or that called Pruysen's Droogte, situated by their observations in lat. 5° 17′ S., and bearing from the South Watcher N. 10° E., distant 25 miles.*

* The Duke of Dorset, May 20th, 1715, sent her boat to sound near the rock, stated in the journal to bear about N.E. from the South Watcher, distant supposed about 2 leagues, and it was found to be a little above

ARMUYDEN BANK, in lat. 5° 13′ S., and bearing from the North Watcher E. ½ S., distant 5 or 5½ leagues, is an island or bank, consisting of loose coral, elevated 10 feet above the sea, and about a mile in circuit, surrounded by a reef of rocks, according to an examination made of it by H. M.'s S. Psyche, in 1812, when her boats landed there; and from its highest part, the North Watcher was just visible, bearing W. ¼ N. This bank abounds with birds' eggs in some seasons; the soundings within 1 or 2 cables' lengths of it are 9 and 10 fathoms, and from 10 to 14 fathoms in the channel between it and the North Watcher. Armuyden Bank.

When the Armuyden Bank bore E. by N. ½ N., distant 3 miles, the Wycombe saw another sand-bank bearing S. S. E.; the Dutch place also a shoal 6 miles to the S.W. of the North Watcher, but probably some of these are doubtful. Those which really exist are not discernible above 5 miles from a ship's deck in a clear day.

THE NORTH WATCHER, a small island, covered with trees, discernible at 6 or 7 leagues' distance, lies in lat. 5° 12½′ S., lon. 106° 32′ E., or 19¾ miles West from Batavia by chronometer, and may be passed on the east or west sides, at 2 or 3 miles' distance: about a mile from its west side the soundings are regular from 11½ to 12½ fathoms; but a coral reef, with only 6 feet water in some parts, stretches round the south end of the island to the distance of about half a mile, with a rock in one place above water. North Watcher.

OMEGA SHOAL is composed of coral, steep to its verge, about 60 or 70 yards in breadth, and extending about N. N. E. and S. S. W. 150 to 200 yards, having on it from 10 to 13 feet water: this dangerous shoal bears about E. by S. from the North Watcher, distant 1¼ miles, and ought to have a wide berth in passing on the east side of that island, from which it is separated by a small channel of 11 and 12 fathoms water. This shoal was discovered by the American ship Omega, Captain Russell, from Canton, bound to New York, by grounding on it, March 1st, 1835, where she lay 25 hours, beat off the rudder, and received other damage:—she got off the shoal by throwing out cargo, value about 15,000 dollars, but was obliged to be hove down at Onrust for repairs in her bottom. Omega Shoal.

From the South Watcher, if the wind be easterly, steer about North, giving a wide berth to the Thousand Islands, and afterwards pass to the eastward of the Armuyden Bank and North Watcher. Having got into about lat. 5° S., or being clear of the North Watcher and adjacent shoals, steer for Lucepara, at the entrance of Banca Strait, bearing from the North Watcher N. by W., distant 40 or 41 leagues. If the wind incline to S.W. and West, steer more westerly, borrowing towards the banks, which project from the Sumatra coast to 9, 10, and 11 fathoms; but these ought not to be approached under 8 or 9 fathoms, particularly in the night. To sail from the South Watcher towards Banca Strait.

The soundings in this track, however, are not always a sufficient guide, the depths varying from 13 to 10, or 9 fathoms, in a direct line between the North Watcher and Banca Strait, and being nearly the same in the track between that island and Gasper Strait. In lat. 3° 45′ S., there is a Five Fathoms Bank, distant about 11 leagues from the Sumatra coast, which might be mistaken for the shore bank, were a ship to get upon it in the night. As the soundings are not a sufficient guide, it may be prudent

water, not half a ship's length in extent, having close to it 13 fathoms water. This must be a different shoal from that described above, or its distance estimated from the South Watcher, in the Duke of Dorset's journal, is erroneous.

to keep well to the westward in day-light, and get a sight of the Sumatra coast at times, edging out in the night as circumstances require.

North Island.

NORTH ISLAND, in lat. 5° 41′ S., lon. 105° 49′ E., or 1° 2½′ West from Batavia by chronometer, and about a mile or more from the Sumatra shore, is small, of an even aspect, and may be seen about 7 or 8 leagues. Off its south point there is a small islet, with a spit projecting a little way, which must have a berth in passing; and with the body of this island bearing N.W. about three-quarters of a mile, the Royal Charlotte grounded on a knowl, January 18th, 1813, with 3½ fathoms water on it, and from 4½ to 5 fathoms close to it on both sides. This island is on the meridian of the west part of Thwart-the-way, and is distant about 10 miles N. 16° E. from the highest of the Zutphen Islands.

Three Sisters, and adjacent coast.

THE THREE SISTERS are three small islands near the Sumatra shore, about a league to the S. S. Westward of North Island; there are two white cliffs on the low coast between them, with a watering place upon the main, a little to the southward of the southernmost White Cliff, where ships sometimes used to fill up their water in the westerly monsoon, particularly those bound from China to Europe, by Banca Strait; fire-wood may also be procured. The coast between North Island and the Sisters forms a bay, where ships in want of water used to anchor in 8, 10, to 12 fathoms, a little to the northward of the North Sister, with North Island bearing about N. by E. or N. by E. ½ E., off the main 1½ or 2 miles. The best position, however, for obtaining a speedy supply of water, is in 7 or 8 fathoms, mud, abreast the middle of the opening between the South and North Sisters; for the best watering place being abreast of the latter, close to the southernmost White Cliff, the boats will make two trips here, for one that they could accomplish at the place where ships commonly anchor, as the tide runs chiefly to the southward in this season.

Amongst the Sisters, the depths are from 2 to 3 fathoms, and the coast of this bay is generally lined by a shoal mud flat. About a mile from the North Sister, with the north end of it bearing W. S. W., the water shoals from 12 to 6 fathoms at one cast of the lead, in standing to the southward; and when the north end of the North Sister is on with the White Bluff Cliff, bearing about W. ½ N., there are overfalls from 13 to 7 fathoms. There is an islet near the main, about 2 miles southward from the Sisters.

Two Brothers.

THE TWO BROTHERS are two small islands near each other, about 6 leagues from the Sumatra coast, covered with trees, and similar in appearance; they may be seen 6 or 7 leagues, and are in one bearing N. by E. and S. by W., having at each end a reef projecting to a small distance, and lining their east and west sides; but they may be approached on the west side occasionally within half a mile, in soundings of 10 or 11 fathoms. These islands are also united by a reef, said to be nearly dry at low water spring tides. The northern island is in lat. 5° 9½′ S., lon. 106° 5′ E., or 47 miles West of Batavia, by chronometer, bearing from North Island N. N. E. ½ E. nearly 12 leagues, and from the North Watcher W. ½ N. about 27 miles.

From Sunda Strait to the Two Brothers.

SHIPS having passed through Sunda Strait, either between Thwart-the-way and the Zutphen Islands, or by the channel betwixt Java and the Button, should steer from these islands, or from the Button, a direct course for the Two Brothers, if bound to Banca Strait. The depths will soon decrease in steering to the northward, and after passing

North Island, 11 or 12 fathoms are good depths to preserve, particularly with a westerly wind; for it is prudent to keep within a moderate distance of the Sumatra coast, to avoid several dangers in the offing. With a working wind, a good mark in day-light, when standing towards the main, is to tack when North Island and the High Zutphen Island are in one; the depth will then be generally 7 or 8 fathoms, and a large ship ought not to go under these depths, in working betwixt North Island and the Two Brothers. The latter may be passed on either side within a few miles, to avoid the adjacent shoals, some of which are very dangerous.

SHAHBUNDAR SHOAL, named from a Dutch ship that narrowly escaped being lost on it, lies about 7 miles West of the Brothers; it is extensive, and is formed of various patches, and seems to be the outer extremity of the shoal bank that projects along and far out from this part of the Sumatra coast. The French ship Jupiter, returning from China, grounded, and had part of her keel broken off upon this shoal. The Sandwich grounded on one of the patches, returning from China in January, 1749, by borrowing too near the coast; when aground in 17 feet water, the northernmost part of Sumatra in sight bore N. by W., the southernmost part S.W. by W. ½ W., and the North Brother E. N. E. Easterly, distant about 3 leagues. She struck very hard, and after being lightened by starting the water, and throwing some lumber overboard, she was forced over the shoal by a brisk wind, after grounding three times on the different patches. As the depths decrease gradually towards this shoal, the lead, if attended to, will indicate its proximity; and a ship passing between it and the Brothers should keep within 1, 2, or, at most, 3 miles of the latter, taking care not to borrow under 9 fathoms towards the coast, which in day-light may be kept in sight, if the weather be clear. The only high land near the shore on this part of the Sumatra coast is a sloping hill, with a knob on its summit, in lat. 5° 20′ S., generally called Knob Hill.* Shahbundar Shoal.

THE DANGERS to be avoided by ships steering a direct course between Sunda Strait and the North Watcher, or in sailing between this island and the Brothers, are the following:— Dangers.

JASON ROCK, on which the ship of this name struck in 1742, is said to lie W.N.W., 2 leagues from the westernmost isle of the Thousand Islands, and 6 leagues S. Westward from the North Watcher; but the Warren Hastings' boat could not find it in this position. This rock is not laid down in some Dutch charts, which have a shoal placed on them about 6 miles S.W. from the North Watcher; its true position seems, therefore, very imperfectly known. Jason Rock.

DOLPHIN ROCK, or SHOAL, where the ship of this name was aground, is said to be nearly even with the water's edge, and lying about 2 leagues S. S. E. from the south end of the Two Brothers: but the true place of this shoal seems likewise not correctly determined. Dolphin Rock.

LYNN SHOAL is about a cable's length in extent, North and South, having only 2 feet coral rocks on it in some places, and from 14 to 9 fathoms around. When the ship Lynn was aground on it in 1748, the Two Brothers bore from W. by N. ¾ N. to Lynn Shoal.

* Not very conspicuous in some views.

N. W. by W. $\frac{1}{2}$ W., distant about 3 leagues. The Bridgewater's boat examined this shoal, and found it to bear from the South Brother E. S. E., distant 8 or 9 miles. Capt. Waterman saw this shoal in the ship Volunteer, July 29th, 1813, when blowing strong with a considerable sea; yet the breakers on it were not high, nor will it be visible when the sea is smooth. When the South Brother and it were in one, they bore W. by N. $\frac{1}{2}$ N., the North Watcher E. $\frac{1}{4}$ S., then distant from the shoal three-quarters of a mile.

The Company's ship General Hewitt grounded on this shoal at 9$\frac{1}{2}$ P.M. August 5th, 1820, and did not get off till 9 A.M. next morning: when she first struck, 2 feet water was found on the shoal, but a considerable part of it was dry at low water about 6 A.M.; and it was found to be nearly a cable's length in extent, composed of hard clay, broken coral, with some small rocks on the northern extremity: the soundings close to it all round are from 10 to 15 fathoms. When aground upon the shoal, the North Brother bore W. 20° N., South Brother W. 13° N., and the North Watcher E. 5° S.

Brouwer Shoals.

BROUWER SHOALS, in lat. 5° 5′ S., are composed of two coral reefs, separated about a quarter of a mile, with a dry patch of sand and coral on each, which are in one bearing, N. 17° E., and opposite. They are distant from the Two Brothers 10 or 12 miles, the north end of the shoal bearing from the North Brother N. 64° E., and the southern extremity bears N. 63° E. from the South Brother. From the North Watcher, the north part of the shoal bears N. 52° W., and the southern dry patch bears N. 55° W. from the same island. The length of this shoal is about a mile, and its breadth a quarter of a mile; in the swatch betwixt the dry patches there are irregular soundings, from 4$\frac{3}{4}$ to 15 fathoms; and hard ground stretches out from the north and south ends of the shoal. To the eastward and westward of the shoal, at a small distance, the bottom is soft, and the depths, about 1 or 1$\frac{1}{2}$ miles to the eastward of it, are generally 14$\frac{1}{2}$ and 15 fathoms regular soundings.

Captain Montgomery Hamilton, of the Dunira, April 23rd, 1819, sent a boat with an officer to the shoal, and when on the south-west patch, the North Watcher bore S. E. by E., North Brother W. by S. $\frac{1}{2}$ S., South Brother W. by S. $\frac{3}{4}$ S.; which appeared to make that part of the shoal to bear N. 69° E., about 15 miles from the South Brother, and N. 54° W., about 13 or 13$\frac{1}{2}$ miles from the North Watcher.

To avoid the Brouwer and Lynn shoals on the east side, a ship should keep nearer to the North Watcher than to the Two Brothers; or within 2 or 3 miles of the latter, if she intends to pass to the westward of these shoals. To avoid the Dolphin Rock, passing between it and the Two Brothers, she should not bring these islands to the westward of North.

Sumatra coast, from the Two Brothers to Lucepara.

THE SUMATRA COAST, between the Two Brothers and Lucepara Island, at the entrance of Banca Strait, is low land, clothed with trees; several rivers in this space fall into the sea, and shoal banks project 2 or 3 leagues from the land, in some places. The most considerable of these rivers, called Tollongbouang, in about lat. 4° 23′ S., is fronted by an extensive bank, with very shoal water on it, stretching nearly 3 leagues off, and several miles parallel to the coast.

Farther North, in about lat. 4° S., another extensive bank projects to a greater distance from the coast than the former, with various shoal soundings on it, and several dry patches. This is generally called the Bank or Shoals off Tree Island, being situated to the eastward and south-eastward of a point of land, having tall trees on it, which is thought to be separated from the main by a small channel, and therefore called Tree Island. About 7 leagues E. N. E. from Tree Island Bank, and 10 or 11

leagues to the S. S. E. of Lucepara, in about lat. 3° 45′ S., there is a bank, already mentioned, with 5 or 4½ fathoms on it, or probably less water in some parts, which several ships have mistaken for the former: this outer bank consists of fine grey sand, and the edge of Tree Island Bank, of coarse sand and gravel. The depths betwixt these banks are generally from 9 to 11 fathoms; but great care is requisite when sailing hereabout in the night, as several ships, by borrowing too close to the coast after coming through Banca Strait, have grounded on Tree Island Bank, and were in great danger.

LUCEPARA ISLAND, about a mile in extent North and South, situated at the southern entrance of Banca Strait, is in lat. 3° 13′ S., lon. 106° 10′ E., or 5* miles East, by chronometer, from the Two Brothers, bearing from them N. 2° E., distant 39 leagues. It is covered with tall trees, having a small peak on it at one part, and a little rising at the other end, when viewed from the south-eastward, and may be seen about 5½ leagues from the deck. Lucepara Island.

A reef projects from the island 2 miles to the S. S. E., and shoal spits of sand extend 4 leagues to the N.W. and N. N. Westward; a reef also lines the north and east sides to one-third of a mile distance, with 3 fathoms close to it, from whence the depths increase gradually to the north-east and eastward, but there are 6 or 7 fathoms within three-quarters of a mile of its south-western side. January 4th, 1813, the Discovery anchored in 6¼ fathoms blue mud, with the island bearing S.W. ½ S., distant 1½ miles, and Captain Ross landed on a sandy beach, on the east side, a little way to the southward of a projecting rock with a tree on it. No fresh water was found, nor could any turtle be procured, although people were stationed on the beach at night; but the island abounded with green and cream-coloured pigeons, of which 46 were shot.

Captain Torin, of the Coutts, sent his boat in 1798 to the south-west side of the island, where a fine spring of fresh water was seen, which appeared to be frequented, probably by the Malay proas.

A ship bound to Banca Strait, having approached the Two Brothers bearing to the eastward of North, should pass near them on the west side, if the wind be favourable; from thence, she may steer N. ½ E. to N. by E. ½ E. for Lucepara, endeavouring to keep in soundings from 9 to 12 fathoms, as a direct course cannot be depended upon on account of irregular currents, or tides setting out from the rivers. Neither can the soundings in this tract be implicitly trusted to, being irregular, from 8½ to 11 or 12 fathoms in some places, particularly contiguous to Tree Island Bank, and the edges of the other banks projecting from the coast of Sumatra; also in the vicinity of the 4½ or 5 fathoms bank in the offing. It is, however, prudent, to borrow towards the main, if the depths increase to 12 or 13 fathoms; and to haul off from it, if they decrease to 8½ or 9 fathoms towards the banks that line the coast. Near these, the soundings are generally hard and more irregular than farther out from the land in 12 and 13 fathoms; but in the latter depths a ship will be too far off the coast with a westerly wind. From the Two Brothers to Banca Strait.

When the weather is very clear, during the day, it may be proper to get a sight of the coast from the poop deck of a large ship, at times, edging out occasionally in the night, or when the depths decrease to 8½ or 9 fathoms.

* Captain Lestock Wilson made the difference of longitude 5 miles, by excellent chronometers, which is probably near the truth. Captain Ross, in his survey of the shoals to the northward of Lucepara, made this island in lat. 3° 13½′ S., by observations taken on it, and in lon. 106° 12′ E., or 42½ miles West of Entrance Point, at the S. E. part of Banca, by chronometers.

Having passed the bank off Tree Island, the coast may be approached with greater safety, and the depths will decrease regularly steering to the northward for Lucepara, to 5½ fathoms when it bears N. ½ E., distant about 3 or 3½ leagues. The south-west point of Banca, in lat. 3° 6′ S., is fronted by extensive banks and overfalls, some of them distant 4 or 5 leagues to the South and S. S. Westward, with soundings of 9 to 14 fathoms between them. Ships steering from the Two Brothers, to give a wide berth to the banks adjoining the Sumatra coast, by keeping in 12 and 13 fathoms, are liable to fall in with the banks which front the south end of Banca; which banks, although not considered dangerous, 7 or 8 fathoms may be got upon them when the land is visible to the northward, distant 7 or 8 leagues, but the coast of Sumatra will not then be discernible; in such case they must haul to the westward to round Lucepara, the channel betwixt it and Banca not being safe, except for small vessels. There may, however, be a safe channel to the eastward of Lucepara, near the Banca shore, for Commodore Watson passed to the eastward of the island Lucepara during the night, in the Revenge, and had never less than 5½ fathoms water; but Captain Ross, in his late examination of this place, found several shoal spits separated by gaps of deep water; and he is of opinion, that no large ship ought to attempt the passage between Lucepara and Banca, for she would probably ground upon some of the shoal spits with 1½ to 3 fathoms water, extending 5½ leagues North of Lucepara, and having from 7 to 10 fathoms water close to them.

If a ship, sailing in the night between the Two Brothers and Banca Strait, should get into shoal water, or be uncertain of her position, it will be prudent to anchor immediately and wait for day-light; for the depths are moderate, and the bottom throughout this track generally favourable for that purpose.

BANCA STRAIT.

Banca Strait. BANCA STRAIT, bounded by Banca Island on the East, and by the coast of Sumatra on the west side, extends from Lucepara Island about 34 leagues, with an undulating course to the north-westward. The Sumatra coast being low marshy land, inundated at high water, and only the trees discernible, navigators are liable to estimate their distance from it greater than the truth; but it ought not to be approached too close on account of a shoal *mud* bank, which extends in some places 2 or 3 miles from the shore. Many ships have grounded upon this *mud* bank, adjoining the coast, and got off with great difficulty, sometimes with loss of anchors and other damage.

Banca Island. The Island of Banca is more elevated than the Sumatra coast, having a chain of hills, generally called St. Paul Mountains, contiguous to its south end; but Parmasang and Monopin Hills, on the west side the island, are more conspicuous. Exclusive of the dangers between Lucepara and Banca, Pulo Laboang Dapper, bearing from Lucepara E. N. E., is a small island situated near the Banca shore.

Tides. THE TIDES in Banca Strait are very irregular, and influenced greatly by the prevailing winds: in favourable weather the flood runs in at both ends of the strait, to the Nanka Islands, nearly in the middle of it, where they meet. During the westerly

monsoon, when rains prevail, the freshes set out of the rivers on the Sumatra coast towards the opposite side; these should be guarded against in the night.

There are, sometimes, two floods and two ebbs in 24 hours; at other times, only one flood and one ebb during the same interval. When strong south-easterly winds prevail, the flood runs strong into the southern part of the strait, frequently for 14 or 16 hours; and the ebb in the opposite direction for 8 or 10 hours. During the opposite season, particularly in December and January, when north-westerly and northerly winds predominate, the ebb, or rather current, sometimes runs strong out of the southern part of the strait for 12, 14, and even 18 hours; and during the remainder of the 24 hours there is only a slack or weak indraught, when the water rises over the ground. In this season it is almost impossible for an indifferently sailing ship to get through the strait to the northward.

In August, and also in other months, the flood has been experienced at times to run in about 12 hours, and the ebb out of the strait the same length of time, taking a turn all round the compass during their change. The velocity of spring tides is sometimes from 3 to 4 miles per hour, when the wind is strong; and the perpendicular rise, from 9 to 12* feet, both within the strait and to the southward of Lucepara. In the channel, between this island and Sumatra, where the bottom is soft over an extensive flat, the rise and fall of tide has seldom been found more than 9 or 10 feet; notwithstanding, the water is so shoal there that large ships deeply laden are liable to touch the ground at low water.

THE WESTERN CHANNEL, formed between the Island Lucepara and a low green point on the Sumatra coast opposite, called Lucepara Point, is the usual passage of vessels proceeding through Banca Strait. In this channel, and to the distance of 3 leagues southward from Lucepara, the water is shoal on an extensive flat, the depths on which are generally from $4\frac{1}{2}$ to $4\frac{3}{4}$ fathoms to 5 and $5\frac{1}{2}$ fathoms. The west side of the channel is bounded by a mud flat, projecting 2 or 3 miles in some places from the coast; and on the east side, several dangerous spits or shoals lie to the North and north-westward of Lucepara, which greatly contract the channel. The distance from the island to the coast is about 3 leagues or more, but the fair channel for ships is not more than 2 or $2\frac{1}{2}$ miles wide in some places, particularly to the north-west of Lucepara, where the shoals in the offing approach nearest to the mud flat that fronts the coast. Navigators, if unacquainted, should send a boat a-head to sound in this part of the strait, keeping in 4 and $4\frac{1}{2}$ fathoms on the edge of the flat that bounds the Sumatra coast: or such boat may sound occasionally on the edge of the westernmost shoals in the offing, as circumstances require.

Western Channel.

Caution.

In passing through the channel, the bottom will *generally*, though not always, be hard sand, if a ship draw near the shoals adjacent to Lucepara, and usually soft mud on the edge of the flat bounding the west side of the channel. Although close to the edge of the north-westernmost Lucepara Shoal, there are $5\frac{1}{2}$ and 6 fathoms, soft ground, yet it is generally hard on the edges of these shoals; a ship ought, therefore, to keep in soundings, if possible, neither hard nor very soft, to preserve the mid-channel track.

The shoals to the north-westward and northward of Lucepara, that bound the channel on the east side, are mostly long narrow spits, extending N.N.W. and N.W. from that island; excepting a round dangerous bank, with $2\frac{1}{2}$ to $1\frac{1}{2}$ fathoms on it, near the southern edge of the extensive narrow spit that lines the east side of the channel. The

Shoals on the east side of the channel.

* It has been stated, that the tides in Banca Strait have been known to rise and fall about 18 feet; if this ever happens, it must arise from some unusual and irregular cause.

western point of this round dangerous bank bears N.W. by W. from Lucepara 8 miles, and S. S. E. $\frac{1}{4}$ E. from the first point about 9 miles, having 4 and 5 fathoms very near its edge, with 6 fathoms about a mile to the westward, or nearly in mid-channel, which is here very little more than 2 miles wide between the coast flat and this dangerous bank on the eastern side the passage.

Grounding of the Cuffnels and other ships.

The Cuffnells, homeward bound, on February 21st, 1803, being too far from the Sumatra shore, grounded upon the N.E. side of one of the long narrow spits, Lucepara bearing S. 32° E., Lucepara Point S. 32° W., and the First Point N.W. After getting afloat, and warping the length of four hawsers to the N.N.E., she anchored in 10 fathoms, mud; Lucepara Island then bore S. 29° E., Lucepara Point, S. S.W. $\frac{1}{2}$ W., First Point of Sumatra N. 49° W., St. Paul Mountains N. 78° E., Pulo Laboang Dapper E. 3° S., observed lat. 3° 4′ S. From this station, the north end of the spit or shoal was found on examination to extend N.N.W. about $1\frac{1}{2}$ miles from the ship; and to round it, she steered N.N.E. 2 miles in 10 fathoms, mud; then westward, to get into the proper channel, decreasing the depths to 5 fathoms about 3 miles from the Sumatra shore.

Captain Egeberg was aground on its western edge in 3 fathoms, in a Swedish ship, Lucepara bearing S. E. by S.; the Camfall, a Portuguese ship, had the island bearing the same, when aground. Captain Torin places the part of that round bank on which he was aground in the Coutts, in $2\frac{3}{4}$ fathoms, about 8 or 9 miles N. 42° W. from Lucepara, the First Point then bearing N. N.W. $\frac{1}{4}$ W., open a little with the western extremity of Parmasang Hills.

H. M. S. Belliqueux grounded in $3\frac{1}{2}$ fathoms, and had hard soundings from 2 to 5 fathoms on the round dangerous shoal, Lucepara bearing S. 48° E., Lucepara Point S. 42° W., First Point N. $26\frac{1}{2}$° W.

The Inglis, homeward bound, December 11th, 1821, got aground on the N.E. point of the westernmost spit that bounds the east side of the channel, about $2\frac{1}{2}$ miles to the northward of the round dangerous bank, Lucepara Island bearing from the ship a-ground S. E. $\frac{1}{2}$ S., Lucepara Point S. by W., and the First Point N.W. $\frac{1}{2}$ N. Here she lay three days upon uneven knowls of hard sand, having only 12 and 14 feet on some of them at low tide; and after having been lightened by taking out the guns, starting the water, throwing overboard the lumber and teas from the orlop deck, exclusive of 700 to 800 chests of teas from the hold, she got off the sand on the 14th, with the aid of two Dutch vessels that came to her assistance.

Some of the Lucepara knowls appear to lie farther to the north-westward of that island than any of the outer shoals were supposed to be situated, for the Company's ship Lord Lowther, Captain Maddan, December 2nd, 1828, anchored in $4\frac{1}{2}$ fathoms, and had $3\frac{3}{4}$ fathoms at low water, Lucepara Island S. 49° E., First Point of Sumatra N. 24° W., Lucepara Point S. 18° W., Parmasang Hills, highest part, N. $18\frac{1}{2}$° W., Pulo Laboang Dapper N. 86° E., St. Paul Mountain N. $71\frac{1}{2}$° E., Small Peaked Hummock N. $11\frac{1}{2}$° W. The boat had less than 3 fathoms at a very small distance to the eastward of the ship at anchor.

These dangers extending farther to the westward than generally supposed, and the mud flat projecting a great way out from the opposite coast, render the channel very contracted in this part, as stated above, which may be farther proved by the following

Capt. Cowman's journal.

extract taken from the journal of Captain Cowman, who passed close to these shoals in the ship Magdalen, August 12th, 1806. At 10 A.M. the Island Lucepara S.E. $\frac{1}{2}$ E., First Point N.N.W. $\frac{1}{2}$ W., in 3 fathoms, distant about 100 fathoms from an extensive shoal, steered along its western edge several miles, in from 3 to 5 fathoms, hard bottom.

When the island bore S. E. $\frac{3}{4}$ E., and the First Point N.N.W. $\frac{1}{2}$ W., had $4\frac{1}{2}$ fathoms, hard ground, close to the shoal. The island S. E. $\frac{1}{2}$ E., and First Point N. by W. $\frac{1}{2}$ W., had 6 fathoms soft, about 100 fathoms distant from the shoal. The island S. 54° E., First Point N. 15° W., had 8 fathoms, about 200 fathoms to the northward of the shoal, and carried from 12 to 14 fathoms from its steep northern verge, to the First Point. This shoal is extensive, and shewed itself very plainly, and the flat stretching from the opposite coast of Sumatra was nearly dry, the tide being very low: the channel between them did not appear to be more than $1\frac{3}{4}$ or 2 miles broad.

In entering the strait, a ship ought not to bring the island to the southward of S. 54° E., until the First Point bears N. 15° W., which will bring her pretty near the Mud Flat; she may then steer North and N. by E. to round the First Point at 3 miles' distance. Sailing Directions.

Ships bound into the strait from southward, generally fall in with Lucepara Island bearing between N. by E. and N.W., in soundings from $5\frac{1}{2}$ to 8 or 9 fathoms: if seen bearing to the westward of North, steer towards the Sumatra coast until Lucepara is brought to bear North, distant 3 or 4 leagues. From hence steer to the N.W., and keep about 1 to 2 leagues from the island, till you draw it well to the eastward, then keep in mid-channel between it and the coast about Lucepara Point, which bears nearly West from the island about 3 or $3\frac{1}{4}$ leagues. It seems advisable to take the soundings from the west side of the channel in this part, when the *wind is westerly*, keeping in soft ground from $4\frac{3}{4}$ to $5\frac{1}{4}$ fathoms; but the depths increase to 6 and 7 fathoms near Lucepara, when it bears between E. N. E. and S. E. by E., and it may be approached in working within 2 miles with these bearings.

When Lucepara bears E. N. E., Parmasang Hills will be discerned, if the weather is clear: in the fair channel the western extremity of these hills bears N. by W. $\frac{1}{2}$ W., and by the time Lucepara is brought to bear E. by S. $\frac{1}{2}$ S., the First Point ought to be in one with the western extreme of Parmasang Hills, bearing about N. by W. $\frac{1}{2}$ W.: you will now have 5 or $5\frac{1}{4}$ fathoms, soon after $4\frac{3}{4}$, or probably $4\frac{1}{2}$ fathoms, for a little way. With the west end of Parmasang Hills kept on with the First Point, steer N. by W. to N.N.W., so as to bring the highest Parmasang Hill nearly on with it when Lucepara bears S. 59° E.; here you will have 6 or $6\frac{1}{2}$ fathoms, being past the shoalest water, and in the narrowest part of the channel, abreast the western extremity of the shoals in the offing, and the mud spit projecting from the coast. Continue to steer about N. by W., still observing to keep the First Point in one with the western extremity of Parmasang Hills, until Lucepara bears S. 50° E.; being now clear of the shoals in the offing, steer about N. by E., to round the First Point at 2 or 3 miles' distance, in 10 or 12 fathoms water. The west extreme of Parmasang Hills kept on with the First Point is a safe leading mark to avoid the shoals on the *east side* of the channel, as stated by Captain Torin, of the Coutts.

If the weather be cloudy, and Parmasang Hills not visible, keep within 3 or 4 miles of the Sumatra shore, observing not to bring Lucepara to the southward of S. 54° E., until the First Point bears N. by W. $\frac{1}{2}$ W.: when within 5 or 6 miles of the latter, edge out a little, to avoid the shoal flat to the southward of that point, being then clear of the western extremity of the shoals in the offing; but ships should not bring the First Point to bear so much northerly as N. by W. $\frac{1}{4}$ W., when it is approached within the distance mentioned above; the Hindostan's boat had only $3\frac{1}{4}$ fathoms on the shoal flat, with this bearing.

From the First Point, E. by N. about 6 miles, lies the Hindostan Shoal, a small bank, with 3 fathoms water on it, and $4\frac{1}{2}$ or 5 fathoms all round: the Hindostan got Hindostan Shoal.

upon this spot May 7th, 1798, and when aground, the southernmost hill of Mount Parmasang bore N. 31° W., low land about Point Lalary N. 54° W., low land about the First Point S. 72° W., Lucepara S. 12° E., a hill on Banca like an island S. 68° E., and a rocky point nearly East. From the First Point E. 2½ miles, 7 fathoms water is the depth, on a spit which extends in a S. S. E. direction about 1½ miles, having from 6 to 5 fathoms on it generally; but there is a patch at its southern extremity of only 4½ fathoms, which bears E. S. E. from the First Point about 3¼ miles.

West side of the channel.

THE MUD FLAT that lines the coast of Sumatra, although not so dangerous as the shoals on the east side of the channel, should, nevertheless, be approached with great caution, for to the southward of the First Point it projects about 2 miles from the shore; and its verge *here*, directly opposite the N.W. extremity of those shoals, is steep to. September 1st, 1803, the Ganges grounded on the Mud Flat to the southward of the First Point, this point bearing N. by W, and Lucepara Island S. E. by E. ¼ E., off shore 2 or 3 miles. This part of the flat appeared to be a spit, for the boats found 8 and 9 fathoms to the W. S.W., with very irregular soundings about the ship. She lay 20 hours in the mud, was obliged to carry out a bower and stream anchor, which were lost, with two men. The Cuffnells, March 7th, 1811, at 2 P. M., grounded on the Sumatra Flat, after having shoaled regularly to 4 fathoms, Island of Lucepara bearing S. E., coast of Sumatra from the First Point N. by W. ½ W. to South, and Parmasang Mount just open with the Point. Carried out the stream anchor astern, and hove off at 2 A. M., being then high water, and anchored about half a mile to the N. E. of the edge of the flat. Other ships, when aground on this mud flat, have been obliged to start part of their water before they could be floated off.

Grounding of several ships

In the Hindostan's journal, April 20th, 1800, Captain Millett made the following remarks relative to the bank. To the southward of the First Point of Sumatra, a mud bank projects about 2 miles from a green point of land: when Lucepara bore S. E. ¼ S., just in sight, First Point N. by W. ¼ W., and the point from whence this bank extends farthest out S. by W. ¾ W., the boat had 3¼ fathoms; and standing off from it, the water deepened suddenly to 5½ fathoms. The Madras put her helm down in 5½ fathoms, and grounded; this bank ought not to be approached under 6½ or 7 fathoms.

The Buckinghamshire, December 20th, 1816, after passing the First Point in 11 fathoms, steering S. E. by E. at 3 P.M. shoaled from 11 fathoms suddenly to 6, 4, and 3¾ fathoms, then grounded on the Sumatra flat, with the First Point bearing N. 20° W. about a sail's breadth open of a small hill that joins the western part of Parmasang Hill, the highest part of which bore N. 18° W., a point to the southward of the First Point S. 84° W., Southern extreme of Sumatra S. 3° W., Lucepara Island S. 42° E., distance off the nearest shore about 2 miles. The bank consisted of soft mud, from which the ship was hove off at high water.

The Waterloo, December 16th, 1817, after passing the First Point, grounded on the Sumatra mud flat, Lucepara Island bearing S. 45° E., and the First Point N. 21° W., and open considerably with the extremity of Parsamang Hill; and the point was on with the second hummock to the westward of that hill. This ship lay aground nine days, and floated off the bank on the 25th, after being greatly lightened by the Winchelsea, in company, having received her guns, shot, and part of the cargo.

The Bridgewater, January 21st, 1818, grounded on the Sumatra flat to the southward of the First Point, with the western extreme of Parmasang Hill N. 19° W., First Point N. 21° W., Lucepara Island S. 40° E., Lucepara Point S. 4° W. After the tide

rose, hove clear of the bank, by four 10-inch hawsers, made fast to the Lowther Castle, at anchor about three cables' lengths distant, in 7½ fathoms water.

August 30th, 1803, the Coutts anchored in 5 fathoms, soft mud, Lucepara Point S. 40° W., the Island E. 22½° S., and the First Point N. 9½° W., distant from the nearest shore 3½ miles; at low water had only 3½ fathoms, and grounded, the tide having fallen 1½ fathoms. She was nearly in the fair channel at this time, but rather a little towards the Sumatra side; for 4½ fathoms is generally the least water in the fair track, with Lucepara bearing E. S. Eastward, which is the shoalest part of the channel. Farther to the northward, the depth increases towards the shoals in the offing, and also towards the mud flat that projects from the coast near the First Point.

BRIEF DIRECTIONS for sailing through the LUCEPARA PASSAGE.—If entering from the southward, and having passed about mid-channel between Lucepara Island and the Sumatra coast, as soon as the First Point is seen, bring it to bear N. by W. ½ W., or just touching the western extremity of Parmasang Hill if the latter is visible, and keeping Lucepara Point to the westward of S. 5° W. until the Island of Lucepara bears S. 54° E.: being then within 7 or 8 miles of the First Point, edge out a little to bring it to the westward of N. 22° W., well open with the western extremity of Parmasang Hill; or even touching, or just opening with Point Lalary, to avoid the Sumatra Flat which projects out 2 miles or more. Another guide is, to keep Lucepara Point between S. 5° W. and S. 10° W., and not to bring Lucepara Island to the southward of S. 36° E. till within 4½ or 4 miles of the First Point; being then to the northward of the outer shoals, this point may be opened considerably with Point Lalary, as you approach to round it at 2 or 3 miles' distance. *Brief directions for the Lucepara Passage.*

Entering from the northward, and having rounded the First Point at 2 or 3 miles' distance, keep Point Lalary open with it, or the western extremity of Parmasang Hill well open with the First Point, observing to keep the latter to the westward of N. 22° W. till Lucepara Island is brought to bear S. 50° E.: being then about 7 miles to the southward of the First Point, and having passed the projecting part of the Sumatra Flat, *where many ships have grounded*, the western extremity of Parmasang Hill should be gradually drawn into contact with the First Point bearing N. by W. ½ W.;* or Lucepara Point kept bearing between S. 5° W. and S. 10° W. appears also to be a safe guide for the narrow part of the channel, between the projecting part of the Sumatra Flat and the shoals situated 2½ and 3 leagues to the N. Westward of Lucepara. When this island is brought to bear E. S. E. you may haul over towards it, as the deepest water is found in that side of the channel, and you may pass it at 2 miles' distance if necessary, in steering to the southward, until 2½ or 3 miles to the southward of Lucepara; being then clear of the long reef, which extends from it in that direction, you may haul more to the eastward at discretion, if needful.

FIRST POINT, on the Sumatra shore, in lat. 3° 0′ S., lon. 105° 58′ E., bearing N. 42° W. from Lucepara Island, distant 17 miles, is low and level, the trees on it *First Point.*

* After rounding the First Point, the Sussex kept the *small peaked hummock* on Banca N. 10° W. until the above Point was on with the gap of Parmasang Hill, and the hummock was then just visible from the poop; least water 7 fathoms. But with the *small peaked hummock* bearing N. 11½° W., the Lowther had only 3¾ at low water on the outermost Lucepara knowl, Lucepara Island then bearing S. 49° E., Lucepara Point S. 18° W., First Point N. 24° W., Parmasang Hill, highest part, N. 18½° W., Pulo Laboang Dapper E. 4° N., and St. Palu's Mountain N. 71½° E.

being of equal height; and it bears North a little easterly from Lucepara Point. The mud flat projecting from this point, is steep, and should not be approached under 10 or 12 fathoms, particularly on the N. E. side, which depths are about 1 or $1\frac{1}{2}$ miles off; neither ought a ship to stand too far out to the eastward, on account of the Hindostan Shoal, already mentioned.

Tanjong Pangong, or Point Lalary.

TANJONG PANGONG, or POINT LALARY, on the Island Banca, bears N.W. by N. from First Point, distant $10\frac{1}{2}$ miles; and the coast of Sumatra takes a westerly direction from the First Point about 5 or 6 leagues, then northerly about 4 leagues to the Second Point, known by a high tree a little inland, very conspicuous above the others. The coast betwixt the First and Second Points forms a deep bight, which is bounded by two interjacent points; that nearest the First Point being generally called the *False* First Point, and the other to the northward, the *False* Second Point. The whole of the coast here, as in other parts, is fronted by a shoal mud flat, projecting from it about 2 miles in some places.

Second Point.

SECOND POINT, in lat. 2° 41′ S., bears from First Point nearly N.W., distant 8 leagues; the Sumatra coast, in this place, may be approached to 11 or 12 fathoms, about 2 or 3 miles off, but ships seldom stand above a half or two-thirds of the channel over towards Banca, on account of an extensive shoal near that side of the strait, opposite the Second Point. This shoal, called Carang Timbaga, although formerly not considered dangerous, is now ascertained to have several dangerous patches on it:* the ship Good Hope, June 28th, 1814, having shoaled suddenly on its edge from 19 to 10 fathoms, the anchor was let go; she had then 6 fathoms rocks under the stern, $4\frac{1}{2}$ fathoms on another spot, and 8 fathoms, sand, at the main chains; Second Point of Sumatra bore W. 3° S., Point Lalary S. 35° E., Parmasang Peak N. 43° E., a rock above water S. 70° E., distant 2 miles. Captain Napier, of this ship, describes the shoal to be a long narrow ridge of rocks and sand, stretching N.W. and S. E. about 2 miles. The first of the flood sets strong to the N. N. E. across the shoal, with ripplings, and the latter part to N. N.W. The boat found regular soundings of 12 and 13 fathoms between the shoal and the rock, with 7 fathoms close to the latter, from which the Second Point bore West, and Point Lalary S. S. E.

Carang Timbaga Shoal, and other dangers.

The following danger, seen by Captain Rush, of the Royal Charlotte, January 15th, 1813, seems to be on the Carang Timbaga Shoal. Past noon, saw a reef of rocks a little above the surface of the sea, probably covered at high water, distant about 2 miles from the Banca shore, and extending about three-quarters of a mile, Parmasang Hill bearing then N. E., Point Lalary S. E. $\frac{1}{2}$ S., Second Point W. $\frac{3}{4}$ N., and the reef East from us, distant about 2 miles.

Captain Ross, of the Discovery, in his survey of the shoals to the northward of Lucepara, ascertained the foregoing shoal to be dangerous. December 29th, 1812, saw some rocks above water, which were on with Point Lalary bearing S. 33° E., anchored in 10 fathoms, and had $7\frac{1}{4}$ fathoms, coral rock, on the edge of the shoal. Sent the boat to sound towards the rocks, and the depths decreased to 2 and $1\frac{1}{2}$ fathoms, alternately rocks, sand, and mud. When on the rocks, the Second Point bore W. $\frac{1}{2}$ N., tree on ditto W. 5° S., White Rock N. $4\frac{1}{2}$° E., Parmasang Point N. 8° E., the peak N. 26° E., Point Lalary S. $32\frac{1}{2}$° E., Great Nanka Island N. 16° W.

Directions.

The best track in passing from the first to the second point is to keep in from 12 to

* Part of it is said to be now an isle, having coco-nut trees on it, with a safe channel between it and Banca.

18 fathoms, mostly regular soundings, and not to stand above mid-channel, or at farthest two-thirds of the channel towards Banca, keeping within 5 or 6 miles of the Sumatra shore.

The General Hewitt, in June, 1816, whilst working between the second and third points, shoaled to 7 fathoms, standing towards the Sumatra coast; the helm was instantly put down, and she had 6 fathoms in stays, distant at least 4 miles from the Sumatra shore.

The brig Shannon, bound from Singapore to Batavia, March 27th, 1825, had shoal soundings of 4 to 3 and $2\frac{3}{4}$ fathoms, with Parmasang Hill E. $\frac{1}{4}$ N., northernmost Nanka Island N. $\frac{3}{4}$ E., Second Point S. E. by S.—and she had $4\frac{1}{2}$ fathoms with the northernmost Nanka Island N. N. E. $\frac{1}{2}$ E., and the Third Point N.W. $\frac{3}{4}$ N.

Parmasang Point, on the Banca side of the strait, projecting out from the hills of this name, is steep to, having 5 fathoms very near it, and a rocky islet a little to the northward; between it and Nanka Point the coast of Banca forms a deep bay, having overfalls and foul ground in this part, rendering it necessary to avoid this side of the strait, and to keep nearest to the Second Point of Sumatra in passing.

THIRD POINT, in lat. 2° 23′ S., bears from the Second Point about N.W. by N., distant 20 miles, and N.W. by W. $\frac{1}{4}$ W. from the highest Parmasang Hill; it is a little higher than the others, having 13 fathoms about a mile off when it bears S.W. $\frac{1}{2}$ S., and only 3 feet at a quarter of a mile distance. The coast of Sumatra betwixt these points forms a deep bay, having a shoal flat stretching across it, and projecting about 4 miles from the shore. To avoid the overfalls on the Banca side, and the flat that lines the Sumatra coast, a ship should round the Second Point at about 3 or 4 miles' distance, then steer northward for the Nanka Islands, keeping in mid-channel; the soundings in this track will be generally from 20 to 16 fathoms, decreasing towards the Nanka Islands; and being abreast of these at 4 miles' distance, haul to the westward for the Third Point, to pass it at the distance of 2 or 3 miles. Third Point.

NANKA ISLANDS (north part of Great Nanka, in lat. 2° 25′ S., lon. 105° $48\frac{1}{2}$′ E.,* by chronometers from Batavia) are three in number, and are situated about 4 or 5 miles from the Banca shore; the middle one is low, but the westernmost, or Little Nanka, and also the Great Nanka, next to Banca, are moderately elevated. The latter is high in the middle, sloping to a point at each end when viewed from the southward, and is about $1\frac{1}{2}$ miles in extent. Nanka Islands.

Ships in want of wood or water frequently touch here to procure a supply, which may be got conveniently on the largest island; small ships may anchor occasionally on the north side the islands in $3\frac{1}{2}$ or 4 fathoms, but here the ground is not good. The Company's ships, bound homeward, anchor to the southward or south-westward of them, where they fill up their water, as these islands are preferable for this purpose to the watering-place at North Island, but not so convenient as at Rajah Bassa. Wood and water.

The Discovery, December 28th, 1812, anchored in $7\frac{1}{2}$ fathoms, clay, with Great Nanka bearing from N. $18\frac{1}{2}$° E. to N. $59\frac{1}{2}$° E., distant about 2 miles, Little Nanka N. $20\frac{1}{2}$° W. to N. $25\frac{1}{2}$° W., Third Point of Sumatra W. 13° N., Parmasang Point S. 30° E., Parmasang Peak S. 47° E., and a large tree on Sumatra, supposed to be that near the Second Point, S. 3° W. The Wexford anchored in $6\frac{1}{4}$ fathoms, about a

* Captain Ross makes them 1° $13\frac{1}{2}$′ East from the east end of Pulo Aor by mean of four chronometers, which agrees with the longitude stated above.

mile off, Great Nanka bearing from N. 12° W. to N. 33° E., and Parmasang Peak S. 42° E.

Amongst these islands there are some rocks; there are also rocks or reefs stretching from them to the Banca shore, having only 2 or $2\frac{1}{2}$ fathoms water between them, precluding any safe passage for vessels inside the islands. From the N.W. side of Great Nanka, a reef projects about 2 cables' lengths, with rocks above and under water; but the N. E. side, in which are several coves with white sand, is safe to approach with boats: that where the watering-place is consists of brownish sand, and the run of water, which is good, may be seen when the tide is low, but at other times it cannot be perceived without landing. There is a spring of water near the S. E. point of the island, not so good as the former, nor sufficient for more than one or two ships: there are also some springs in a bay, with a sandy beach, on the west side the island, where H. M. S. Belliqueux, and a convoy of seven sail from China, filled up their water in March, 1811. The tide rises 12 feet perpendicularly during the springs, and sometimes more.

Tides.

Fourth Point.

Coast and shoal bank.

FOURTH POINT, in lat. 2° 20′ S., bears from the Third Point about W. $\frac{1}{2}$ N., distant 7 leagues; the coast is concave between these points and lined by a shoal bank, which may be approached occasionally to 7 or 8 fathoms, regular soundings; but you may keep 3 or 4 miles off shore, not coming nearer the edge of the bank than 10 fathoms. This is considered the safe side of the strait, the Banca side having in some places foul ground and overfalls, and forming a deep bight between the Nanka Islands and Mintow Point, is seldom closely approached; for ships generally keep within 5 or 6 miles of the Sumatra coast, in regular soundings from 9 to 12 fathoms. The Fourth Point may be approached occasionally to 10 fathoms, at the distance of half or three-quarters of a mile. From the Fourth Point the coast stretches nearly West about 7 or 8 leagues, and in this space the different branches of Palamban River fall into the sea. Shoal banks project 3 or 4 miles from these rivers, which are steep to, from 8 or 9 fathoms, and ought never to be approached under these depths night or day. This may be considered as a continued bank extending north-westward and westward from the Fourth Point, projecting from it about 2 miles, but much farther out, a little to the westward of the point, and opposite Palamban Rivers. Several ships have grounded on this bank, by borrowing too closely. The Wycombe, after rounding the Fourth Point about 2 or $2\frac{1}{2}$ miles' distance, in 10 fathoms, continued in 10 and 11 fathoms until the lead was overhove, and before another cast could be got, she grounded on the edge of the bank, the extremes of Sumatra bearing from W. 6° S. to E. 19° S., Fourth Point S. 58′ E., Monopin Hill N. 1° E., easternmost part of Banca in sight N. 45° E., off the Sumatra shore 3 miles. A little way inside the ship, the boats had 10, 7, and 3 feet water, and the whole of the bank towards the shore and the Fourth Point seemed very little covered at low tide. About half a cable's length outside, the water deepened to 8 fathoms, and in this depth an anchor was laid, by which she hove off the bank on the following tide. The bank is hard sand, covered with a thin stratum of black mud; and as there are 8 fathoms on its steep edge, and 11 fathoms very near, it ought not to be approached under 11 or 10 fathoms, with the lead kept going. To avoid it in day-light, the Fourth Point should not be brought to the eastward of S. E. by S. or S. E. $\frac{1}{2}$ S., nor should the point be passed nearer than 3 miles; when to the westward of the point, a ship ought to keep at least 4 miles from the shore. Off Palamban River it is high water at 8 hours on full and change of moon, rise of tide 7 or 8 feet.

Ships that have grounded on it.

How to be avoided.

Tides.

Batacarang Point.

BATACARANG POINT, in lat. 2° 0′ S., lon. 104° 53′ E., bearing N.W. by W. 11 or 11½ leagues from the Fourth Point, is surrounded by shoals, stretching out about 2 leagues, and known by a clump of trees which gives it a bluff appearance; the False Point is more sloping and flat, and lies about 6 or 7 miles farther southward, between which and the Fourth Point the land forms a deep concavity, where the branches of Palamban River disembogue into the strait. Salsee River, situated nearest to the Fourth Point, is the easternmost branch; the next is generally called False River, the third Palamban River, and the westernmost Salt River. These rivers have inside from 3 to 8 or 10 fathoms; and 1½ or 2 fathoms outside, in the channels through the bank that fronts them. During the rainy season, large drifts are brought down these rivers by the freshes, which then set strong over towards the west end of Banca; and as the flood sets strong into them, on the springs, great care is requisite in this part of the strait, to avoid being driven too near either shore, both sides being fronted by dangers. PALAMBAN TOWN is about 14 leagues up the river; its chief trade is tin, procured from the Island Banca, with some pepper, and rattans, the produce of Sumatra.

Small ships passing through Banca Strait or Gaspar Strait, should be always on their guard, to repel any attack from the piratical proas, which often lurk about the strait to surprise defenceless vessels.

Monopin Hill.

MONOPIN, or MANOOMBING HILL, in lat. 2° 0′ S., lon. 105° 14′ E., by mean of chronometers from Batavia and Pulo Aor, is situated on the west end of Banca; and its summit ending in a peak, which may be seen at a considerable distance, answers as a guide in approaching to or departing from the north end of the Strait. About 2 leagues S. 35° W. from the hill is situated Tanjong Colean, or Mintow Point, the western extremity of Banca, having a fort on it; and the town of Mintow is a little farther eastward. Mintow Bank is composed of hard sand, with soundings from 2 or 3 to 5 fathoms, and it extends a considerable way, nearly parallel to the coast; inside of it there are 10 and 12 fathoms, decreasing regularly towards the shore, where ships anchor in Mintow Road. A ship working through the strait, to keep clear of the outside of Mintow Bank, should not bring Mintow Point to the westward of N.W. by N.

Mintow Town and Bank.

Carang Bram Shoal.

CARANG BRAM, an extensive shoal of rocks and sand, dry in some places, forms the eastern extremity of Mintow Bank, and lies 4 or 5 miles from the shore, off a point of Banca, called Tanjong Pooni; and this shoal, when on with the Peak of Monopin Hill, bears N. 39° W.

Amelia Bank.

AMELIA BANK, of 3¼ fathoms, hard ground, on which the Walmer Castle grounded, and the Princess Amelia touched, homeward-bound from China, in 1816, lies about 1½ or 2 miles outside Carang Bram Shoal. Monopin Hill bears from it N. by W. ¾ W., and the eastern extreme of Carang Bram Shoal E. ¼ N., distant 2½ miles, according to a plan of it, by Captain Balston, of the last-mentioned ship. The Hope passed inside, between it and Carang Bram, in soundings from 5 to 10 and 12 fathoms: the depths increased gradually from 4½, to 7, 8, and 10 fathoms in a westerly direction from it; and to the southward of it, at the distance of about half a mile, the Warley carried regular soundings of 8 and 9 fathoms, and it ought not to be approached under 7 or 8 fathoms.

The Bridgewater, at 4 P.M., January 19th, 1818, grounded on the Amelia Bank,

Monopin Hill bearing N. 20° W., Woody Point N. 43° E., Carang Bram Rocks N. 80° E., extremes of Banca from N. 40° W. to N. 68° E. Found the least water 19 feet, under the larboard fore-chains, and deepest to the S. S. E., in which direction laid out two kedge anchors, and at 11 P.M., when the tide began to flow strong to the eastward, the water rose, and at 1 A.M. the ship floated off the bank.

Carang Hodjee.

CARANG HODJEE is another dangerous shoal, close to the west end of Mintow Bank, and its outer part is distant 5 or 6 miles from Mintow Point, being in one with Monopin Peak bearing from N. E. ½ N., to N. E. ¾ E., and it is very extensive. The rocks on it are all covered at high water, but many of them are visible at half-tide; close to it on the north and west sides the depths are irregular, from 16 to 30 fathoms. From Tanjong Colean, or Mintow Point, the northern rock of Carang Hodjee bears W. ¼ S., distant 2 miles: other rocks on the shoal bear W. by S. to W. S. W. from the south point.

To sail into Mintow Road.

TO SAIL into MINTOW ROAD, a ship may pass on either side Carang Hodjee; if on the east side, Monopin Peak must be brought N. N. E., and with this bearing, she should steer for Mintow Town, which would carry her about a mile or more to the southward of Carang Hodjee, in about 5 or 6 fathoms, hard sand, upon Mintow Bank.* When over it, the water will deepen to 12 or 13 fathoms, and shoal again quickly towards the inner bank and the shore; the best anchorage is in 10 or 11 fathoms, about 2 or 3 miles off the town, Monopin Peak bearing N. 10° E., Tanjong Pooni S. 75° E., and Mintow Point N. 82° W. No ship can pass over Mintow Bank with safety, if the hill bear to the westward of N., for on the eastern part, towards Carang Bram, it dries in many places. With the hill bearing North, a ship steering for Mintow Road will cross over the bank in about 3 or 3¼ fathoms at low water spring tides, the bottom hard sand, coral, and shells. With a working wind, keep the hill between North and N. N. E. The Inner Bank is about 1¼ miles off the shore of Mintow, having only 1 fathom water on it, 2 fathoms inside, and 8 fathoms close to it on the outside.

If a ship coming from the northward intend to enter Mintow Road on that side of Carang Hodjee, she ought to bring Monopin Peak E. N. E., which will carry her between Frederick Hendric and Carang Hodjee; and she may pass betwixt the latter and Banca, in a channel about 1½ miles wide, in 18 to 15 fathoms water, borrowing towards the Banca shore, but not under 8 or 9 fathoms. Carang Hodjee must be avoided, for it is steep to, with overfalls near it, and rocky ground, from 16 to 30 fathoms. She may pass Mintow Point within half a cable's length, then haul out to a convenient distance from the shore, and proceed to the anchorage abreast the town.

Coast and dangers to the northward of Mintow Point.

TANJONG OULAR is a point about 5 or 6 miles to the northward of Mintow Point, having rocks projecting 3 or 4 miles from it, the outermost of which are on with Monopin Peak bearing S. 70° E.

Tanjong Beeat, a little farther northward, has also dangerous reefs of rocks projecting about 4 miles out; when on with Monopin Peak, the outermost of these bears

* Mintow Bank is said to be filling up, for in August, 1816, the Surat Castle, in crossing it with Monopin Hill bearing N. N. E., had only 4 and ¼ less 4 fathoms; and with the Hill bearing the same, at leaving Mintow Road, she had two casts of only 3½ fathoms, in crossing the bank; where formerly 5 and 6 fathoms were found.

S. 28° E. Betwixt these rocks and the others, called Frederick Hendric, about 3½ leagues off the Banca shore, there is a channel nearly 2 leagues wide, which is seldom frequented except by country traders; and it ought not to be chosen by strangers, for the number and *true* positions of the Frederick Hendric Rocks are not correctly known. A vessel, to proceed by it, should not come under 14 fathoms towards Banca, nor stand farther out than to bring the easternmost land in sight, called Poonyabang, and appearing like an island, to bear N. E. ½ E.; with this bearing, and Monopin Hill about S. 70° E., a ship will have 18 fathoms hard sand and overfalls, near Frederic Hendric. Inner Channel.

THE FREDERIC HENDRIC has generally been considered a *single* rock, situated nearly mid-way between the west end of Banca and Batacarang Point; but there is great cause to think that *several* spiral rocks, separated from each other, exist in that situation, which have been mistaken for one and the same rock: this will be perceived by the following remarks. Frederic Hendric Rocks.

The Nonsuch, July 29th, 1789, after tacking in 5 fathoms on the edge of the bank off Batacarang Point, stood E. ½ S. to 12 fathoms, then tacked in 11 fathoms, and immediately grounded, Monopin Hill bearing E. 13° S., off the Banca shore 3 or 3½ leagues, and about 4 leagues from the Sumatra shore. Under the bowsprit, had only 1½ fathoms, and 5 fathoms abaft. The tide flowing, she got off, after being lightened forward. The rock on which she grounded was thought to be the *true* Frederic Hendric. Farther to the northward, she had previously tacked in overfalls, from 7½ to 12 fathoms, hard ground, on the same side the channel.

The Charlotte, in 1786, explored another shoal, of considerable extent, thought to be Frederic Hendric, with soundings on it from 2 to 5 fathoms, rocks and sand. The boat, at anchor in 1½ fathoms on the shoalest part, had Monopin Peak bearing E. 23° S., southernmost extreme of Banca S. 18° E., extreme of the Little Caramanaches N. 43° E., northern extreme of the land E. 35° N., the westernmost island N. 38° E., and a bluff rock near the shore E. 18° S.

The Cæsar anchored in 16 fathoms, had 10 fathoms after veering out cable, and at half a cable's length from her the boat had 2¾ fathoms, Monopin Hill bearing E. S. E. 4 leagues.

A Portuguese ship aground had the west point of Banca E. S. E., and a point on Sumatra W. ½ N., thought to be Batacarang Point.

Captain Waterman, of the ship Volunteer, went in his boat to examine the Frederic Hendric Rocks in July, 1813, where he perceived white water; but the current setting strong into the strait, carried him past the north part of the shoal. When upon the south part of it, in 3 fathoms, hard sand, Monopin Hill bore E. 13° S., Mintow Point E. 35° S., high trees of Batacarang Point W. 10° S., and at the distance of a ship's length had 19 fathoms. That part of the shoal where he sounded was hard white sand, which discoloured the water by the current running over it, as the white water extended out to 17 fathoms, at a considerable distance from the shoal. This navigator thinks the shoal is not above 6 miles distant from the nearest part of Sumatra, and that no ship should deepen above 10 or 11 fathoms, as the water deepens very suddenly from 12 fathoms, which is near the steep edge of the shoal.

Another navigator says, that Frederic Hendric Rock is in one with Monopin Peak bearing E. 20° S., and distant 3½ leagues from Banca. It is generally thought, that 8 or 9 feet is the least water on this rock, but some persons assert that its summit appears above water at times, when the tide is very low. This may *probably* happen,

as the perpendicular rise and fall of tide is about 2 fathoms on the springs; notwithstanding, navigators, in passing, seldom discern it, or perceive breakers upon any of these dangers, which go by the name of Frederic Hendric. To avoid them, ships passing through the fair channel ought to keep in 6 or 7 fathoms, on the edge of Batacarang Bank, and never deepen to the eastward above 9 fathoms, when Monopin Hill bears from E. to E. S. E. $\frac{1}{4}$ S.

To avoid them.

Passage from Fourth Point out of the Strait.

A SHIP bound out of the strait, having passed the Fourth Point at 3 or 4 miles' distance, in soundings 11 or 12, but not under 10 fathoms, should steer about N.W. by W. for Batacarang Point, attending to the tides, which sometimes runs strong into, or out of Palamban rivers. The banks fronting these rivers should not be approached under 10 fathoms, nor ought a ship to deepen above 12 or 14 fathoms towards Carang Bram, and Mintow Bank, on the Banca side. In the fair track, there are some small sandy spots, which might alarm strangers, or be mistaken for the shoals on the Banca side, if a ship get upon them in the night; but the least water on any of them is 6 fathoms. When abreast of an island at the entrance of the False River, with a passage on each side of it appearing open, a cast of 6 fathoms may probably be got upon one of these spots. Another patch, with 7 fathoms, bears nearly S. $\frac{1}{2}$ W., distant about 6 miles from Mintow Point. When on another 7 fathoms bank, Monopin Hill bore N. 20° W., and the Fourth Point S.W. $\frac{1}{2}$ S., distant about 2 leagues. From another bank of 9 fathoms, Monopin Hill bears N. by W. $\frac{1}{2}$ W., and the Fourth Point S. by W. about 6 miles. The best track is about mid-way between the Banca and Sumatra shores, or rather nearest to the latter, during the night, where the bank fronting the coast is safe to approach to 9 or 10 fathoms, if the lead is kept briskly going.

Steering about N.W. by W. for Batacarang Point, the depths will probably increase to 15 or 16 fathoms to the south-westward of Mintow Point, and decrease as the western shore and Batacarang Point is approached. Before Monopin Hill is brought to bear East, a ship ought to borrow towards the edge of the Sumatra Bank, to 8 or 9 fathoms, and when the hill bears between E. by S. and E. S. E. $\frac{1}{4}$ S., she must keep as near as possible in $6\frac{1}{2}$ and 7 fathoms, mud, on the edge of the bank projecting from Batacarang Point, in order to avoid the Frederic Hendric Rocks. With a working wind, a ship should not deepen above $7\frac{1}{2}$ or 8 fathoms, towards these rocks; but she may stand on the western tack, to 5 fathoms on the edge of Batacarang Bank. The channel here is about 4 or 5 miles wide, and if a ship deepen to 10 fathoms, she will be very near the Frederic Hendric Rocks. Having brought Monopin Hill to bear E. S. E. $\frac{1}{2}$ S., she will be clear of these rocks, and of the north end of Banca Strait; and if bound into the China Sea, may steer about N. by E. to pass between the Seven Islands and Pulo Taya, which are high islands.

Tides.

When northerly winds blow from the China Sea, from October to February, the current or flood frequently sets strong to the south-east into the north entrance of Banca Strait, for 18 hours at a time; and in the same direction to the eastward of the Island of Banca. When S. E. winds prevail, the ebb generally runs strong out of the strait, continuing longer than the flood; although the Volunteer, in July, 1813, worked into the entrance of the strait with a strong current setting to the southward. In settled weather, there are two floods and two ebbs every 24 hours, but they are greatly influenced by the winds.

PASSAGE FROM THE NORTHWARD, THROUGH BANCA AND SUNDA STRAITS.

To enter Banca Strait from the northward.

WHEN BOUND from the NORTHWARD to BANCA STRAIT, haul in for the Sumatra coast into 6 or 7 fathoms, mud, on the edge of the bank fronting Batacarang Point, before Monopin Hill is brought to bear S. E. by E. $\frac{1}{2}$ E.; preserve that depth, or keep from 5$\frac{1}{2}$ to 7 fathoms, if the wind be westerly, until the hill bear about East, which will carry you well to the westward of Frederic Hendric Rocks: steer then about S. S. E. 4 or 5 miles, till abreast of Carang Hodjee Shoal, afterwards S.E. to E. S. E., or, as the tides render necessary, to pass in mid-channel, because the flood running into Palamban rivers may drift you on the banks projecting 3 or 4 miles from them, if too near the Sumatra shore, or the strong freshes from them at other times may set you over towards the shoals adjacent to Banca. It is, therefore, imprudent for strangers to run in the night, unless the weather be clear and the land visible.

To proceed to the Fourth and Third Points, and to the Nanka Islands.

After leaving the bank off Batacarang Point, the depths will increase, and from 10 to 12 fathoms are the best depths to preserve in passing the bank off Palamban rivers and the Fourth Point. The bank to the westward of this point being steep from 8 to 2 fathoms, it must not be approached under 10 fathoms, and the point having a mud bank projecting 3 miles from it, should be passed at 4, to 5 or 6 miles' distance, in 10 or 12 fathoms; steer then about E. $\frac{1}{2}$ S. for the Third Point, in 10 to 14 fathoms, at about 3 miles' distance, not coming under 10 fathoms towards the bank fronting the Sumatra shore, and do not stand farther off than 6 or 7 miles. The Third Point may be passed at 2 or 3 miles' distance, in 10 or 11 fathoms; from thence an easterly course should be steered towards the Nanka Islands; for the deep bight betwixt the Third and Second Points being occupied by an extensive flat, projecting about 4 miles off, you ought to keep about mid-channel in this part, or 6 miles distant from the Sumatra shore.

From the Nanka Islands to the Second and First Points.

When near the Nanka Islands, a southerly course should be steered for the Second Point, known by a tree near it very conspicuous above the others; the depths will be from 16 to 20 fathoms in this track, and the Second Point ought to be passed at 3 or 4 miles' distance. From hence to the First Point, the best track is not to stand above a half or two-thirds of the channel over toward Banca, to avoid the overfalls and dangers on that side; from 12 to 18 fathoms are the best depths to preserve, keeping within 5 or 6 miles of the Sumatra shore, and not borrowing nearer it than 3 miles.

From the First Point through the Lucepara Passage.

The First Point should not be rounded nearer than 2$\frac{1}{2}$ or 3 miles, in 10 to 12 fathoms, and after passing it, the Island of Lucepara will be seen to the south-eastward. From the First Point a southerly course must be steered, keeping at least 3 miles, but not more than 4 or 4$\frac{1}{2}$ miles from the Sumatra shore, in 6 to 7 fathoms, soft ground, until 4 or 5 miles southward of the point; for the mud spit to the southward of the First Point projects at least 2 or 2$\frac{1}{4}$ miles, having 5$\frac{1}{2}$ fathoms close to its edge. Having proceeded about 2 leagues to the southward of the point, or before Lucepara is brought to bear S. 50° E., borrow on the Sumatra shore to 3 miles' distance, to give a berth to the western extremity of the dangers in the offing. This is best effected by bringing the First Point to bear N. by W. $\frac{1}{2}$ W., or if Parmasang Hills are visible, keep the

point on with their western extremity; when Lucepara is brought to bear about S. 54° E., the highest hill may be brought on with the First Point, and continued so, until the island bear about S. 60° E. Being then clear of the western extremity of the shoals in the offing, steer to the southward with the First Point bearing about N. by W. ½ W. in one with the western extremity of Parmasang Hills, keeping about 3 miles off the coast until Lucepara bears about East; you may then edge out from the coast to the south-eastward, to deepen the water, and the island may be approached within 2 or 3 miles if necessary; when it is brought to bear North at 3 or 4 leagues' distance, you will be clear of the strait, and will have 5½ or 6 fathoms water. When to the north-westward of the island, if hard soundings are got towards the shoals adjacent to Lucepara, haul to the westward into soft ground, in the fair channel. With a working wind, from 4½ or 5 fathoms on the Sumatra side, to 6 or 7 fathoms towards the shoals, are good soundings; do not open the First Point with the west end of Parmasang Hills, nor bring the point to bear N.N.W. till Lucepara bears S.E. by E. ½ E.*

Proceeding from the First Point through this narrow part of the strait, it is advisable for persons unacquainted to keep a boat a-head sounding along the edge of the mud bank that lines the coast, the channel being only about two miles wide between it and the western extremity of the shoals in the offing, and so flat to the westward and W. N. Westward of Lucepara, that ships seldom find more than 5, and sometimes only 4½ or 4¾ fathoms, in the fair track. By keeping a boat sounding in 4 and 4¼ fathoms on the edge of the mud bank, a ship will be enabled to pass through in the proper channel, when other marks are not always discernible. It is necessary when off the First Point to borrow on the Sumatra side, for the ebb tide here sets strong to the E. S. E., and in the latter part of the North-east monsoon, from February to April, a strong current sets in this direction out of the strait, which is liable to horse a ship among the shoals to the north-westward of Lucepara.

From the Lucepara Passage to the Two Brothers.

After bringing Lucepara to bear about N. by W. ½ W., distant 5 leagues, the depth will increase to 6 or 6½ fathoms, and from thence steer S. S. E. and S. by E. to avoid the shoal banks off Tree Island. As the currents are sometimes irregular, the course cannot be always depended upon, neither are the soundings very regular, for there is a 5 fathoms bank about 10 leagues S. S. Eastward of Lucepara, which some ships have mistaken in the night for the bank adjacent to the coast. In day-light you may borrow towards the Sumatra Bank to 9 fathoms, occasionally getting a sight of the land; if the depths decrease under 9 fathoms, haul more out, and endeavour to keep in 10 or 11 fathoms, night or day; and should they increase to 12 fathoms, edge in towards the coast, until you regain the depth of 10 or 11 fathoms.

Having got into about lat. 4° 40′ S., or being within 8 or 10 leagues of the Two Brothers, keep as near as possible in 9 to 10 fathoms, in order to see these islands bearing to the southward; for if the depth is more than 11 fathoms when they are first discerned, difficulty may be found in passing to the westward of them with a westerly wind; the more so, as the current generally sets to the south-eastward during the westerly monsoon. If you get into 11 fathoms or upwards, and fall to leeward of the Two Brothers, be careful to give a berth to the Brouwer Shoals, lying E.N.E. of these islands; and if you fall in with the North Watcher, take care in working to the south-westward to avoid the Jason Rock, and the other dangers described in a preceding section, in which directions are given for sailing from Batavia and Sunda Strait, to the Strait of Banca.

* Brief Directions for the Lucepara Passage have been given in a preceding page.

SHIPS from BANCA STRAIT, bound to Batavia, after falling in with the North Watcher, generally steer for the South Watcher, giving a berth to the Thousand Islands in passing; and from the South Watcher they steer direct for Batavia Road. The dangers in this track may be avoided, by attending to the directions above mentioned. The Two Brothers appear in one when viewed from the northward, and may be seen 6 or 7 leagues; some ships have nearly run into danger by mistaking Knob Hill on Sumatra for the Two Brothers; it is therefore proper to have a good sight of them, if they are to be passed in the night: and if not plainly seen before dark, it will be prudent to anchor, or keep standing off and on, during the night; for the Shahbundar Shoal, to the westward of these islands, extends a great way from the coast, and is dangerous to approach.

From Banca Strait to Batavia.

Caution in passing the Two Brothers.

If bound to Sunda Strait, keeping sight of the coast at times, in clear weather, and preserving the depth of 9 or $9\frac{1}{2}$ fathoms, on drawing near the Two Brothers, steer to pass on the west side of them, at from 1 to 3 miles' distance, observing not to borrow under 9 fathoms towards the Shahbundar, or other shoals fronting the coast, nor to exceed the distance of 3 miles from the Two Brothers in passing. If you pass them on the outside, keep within 2, or at most 3 miles of them, until they bear to the eastward of North; by which means, the Brouwers Shoals, Lynn Shoal, and Dolphin Rock, will be avoided. Having passed the Two Brothers, a south-westerly course should be steered, to get in with the coast about North Island; which, with the high Zutphen Island, will be seen soon after losing sight of the Two Brothers, if the weather is clear. Betwixt the latter and North Island, you may stand towards the Sumatra shore to 8 fathoms, with a working wind; in day-light, a good mark is to tack when North Island comes on with the High Zutphen Island, you will then generally have $7\frac{1}{2}$ or 8 fathoms soft ground.

From the Two Brothers to North Island.

From North Island, ships used formerly to steer over for St. Nicolas Point, and then along the Java Coast inside the Button, which route is now disused, being circuitous, and the leeward side of the strait in the westerly monsoon; but during the easterly monsoon, ships ought to prefer the Java side,* and pass out of the strait between Princes Island and Crockatoa, if they do not intend to stop for a supply of water at Mew Bay: in such case, they may go out of the strait betwixt Princes Island and Java.

Route along the Java coast.

If bound out in the westerly monsoon, give a berth of a mile to the islet and spit at the S. E. end of North Island, and if not to stop to fill up your water at the Three Sisters, stand along the coast, keeping about 2 miles off shore, until the Zutphen Islands are approached, and anchor in Hounds Bay, at the north part of these islands, if the day is far gone. From hence, weigh early in the morning, and although the wind be scant, you will probably reach good anchorage under Pulo Bessy, or Crockatoa, before the tide shift. The tide in this season generally sets to the southward and south-westward, from 4 o'clock in the morning until the evening, and sometimes to the north-eastward or northward, during the night.

To proceed from North Island.

Tides.

Having weighed from Hounds Bay, or being near the northernmost Zutphen Island at day-light, pass it at $1\frac{1}{2}$ miles distant, and with the land wind, steer to pass the S.E. island, called Hout Island, at the distance of $1\frac{1}{2}$, or not under $1\frac{1}{4}$ miles.

The indraughts between these islands produce strong eddies, which render ships ungovernable at times, when the wind is light; and in February and March, the cur-

Eddies.

* It is advisable not to stop at Anger Road in April, or even in May, with the hope of procuring water, as the surf is often high in these months; the Company's ship Charles Grant was driven on shore, April 10th, 1826, and nearly wrecked, after having parted from all her anchors.

rent or tide sweeps round them to the S.W. and W. S.W., until past Hog Point, with a velocity of 4 and $4\frac{1}{2}$ miles per hour on the springs; this makes it necessary not to borrow too close in rounding Hout Island, to prevent being drifted upon the reef that projects a little way from it, where the Bombay was nearly wrecked.

Zutphen Islands and Hog Point

When past Hout Island, or when it bears W.N.W., steer to the W. S. Westward, so as to round Hog Point at $1\frac{1}{2}$ or 2 miles' distance, where you will have strong ripplings, but no danger to be apprehended in the day-time. Having rounded the rock off Hog Point, when it bears North, haul up W. N.W., and gradually to N.W., if you intend to touch at Rajah Bassa Road for water or refreshments, giving a berth to Collier Rock, by keeping 2 or 3 miles off shore, as you get to the northward. If the wind be at North, or off the land, haul nearer to the shore, but you will not get moderate depths until within 3 or 4 miles of Coco-nut Point, and you may round it in 12 to 18 fathoms, at $1\frac{1}{2}$ to 2 miles' distance, then haul up N. N.W. and N. by W. for Rajah Bassa Road, and anchor with the peak E. N. E. or E. N. E. $\frac{1}{2}$ N., in 12 to 14 fathoms, blue mud, off shore $1\frac{1}{2}$ or 2 miles.

Rajah Bassa Road.

After getting 4 miles to the northward of Hog Point, a ship in working may safely stand in to 12, and off shore to 20 fathoms.

Fresh water.

The boats proceeding to Rajah Bassa for water will perceive a *hut* at a small distance to the right of the river, which should be kept on the starboard bow, in order to pass in, clear of the projecting coral rocks.

From Hog Point to the westward.

After rounding the Zutphen Islands and Hog Point, if not to touch at Rajah Bassa, steer for Pulo Bessy, making an allowance for the tide, which generally sets over towards Java in this season; and as the wind prevails from the westward, ships are frequently obliged to work from the Zutphen Islands out of the strait: nevertheless, if they round these islands in the morning, they generally get close to Pulo Bessy or Crockatoa, into good anchorage, before the tide shifts. The passage between the Zutphen Islands and Stroom Rock should not be attempted in the night, as the strong tides are liable to horse a ship towards the latter and Thwart-the-way, where deep water and rocky bottom render the anchorage very unsafe.

Between Pulo Bessy and Crockatoa.

In blowing weather a ship may anchor under Crockatoa, where she will be sheltered from westerly winds: or having approached Pulo Bessy, the channel between it and Crockatoa ought to be preferred to that betwixt the latter and Princes Island, because there is good anchorage, should calms or contrary currents make it necessary to anchor, which cannot be done in the channel to the southward of Crockatoa.

With a fair wind, keep nearly in mid-channel, and if working through with a westerly wind, stand within $2\frac{1}{2}$ miles of the islands on either side, but not nearer to the south end of Pulo Bessy than 2 miles, in order to avoid the Hindostan Rock; taking care not to bring Zee Klip, or Gap Rock, open to the southward of Keyser Island, as directed at page 142, where the Zee Klip is described. When clear of Crockatoa, steer about West, which will carry you directly out of the strait, if the wind be favourable. With a westerly wind, make short tacks towards the coast of Sumatra, borrowing on that side the strait until you can pass clear out, well to the northward of Princes Island; and when clear of it, steer S. Westward, to round Java Head, if bound to Europe, or to the Cape of Good Hope.

Leaving the strait.

When strong winds blow into the strait with a heavy sea, it is difficult, and sometimes impossible, to beat out to the westward, by the large channels to the northward of Princes Island; although at such times little difficulty has been experienced, by several ships which have proceeded out through Princes Strait, as Princes

Island protected them from the heavy sea until they cleared the strait: but the entrance of the strait should be kept open by those who adopt this passage, until they obtain a proper offing, on account of the heavy swell, liable to drive a ship near the steep shore of Java Head, if the wind should happen to fail.

GASPAR STRAIT AND THE NORTH-EAST COAST OF BANCA.

GASPAR STRAIT, formed between the island of Banca on the West, and Billiton on the East, was named after the Spanish captain who passed through it from Manilla, in 1724; but Captain Hurle, returning from China in the English ship Macclesfield, had previously passed through it in March, 1702. Pulo Leat separates this strait into two principal branches; that to the westward, betwixt it and the S. E. part of Banca, is often called Macclesfield Strait; and the eastern branch, situated betwixt Middle Island and Long Island, near Billiton, is generally called Clements Strait, after Captain Clements, who commanded the fleet from China, that went through this branch in July, 1781. Gaspar Strait.

Many navigators prefer these straits to that of Banca, particularly when returning from China late in the season, as the route by them is shorter, and the water much deeper than in the Lucepara Channel, with generally more wind. Were it not for several dangerous shoals near the water's edge, interspersed about these straits, they would be preferable at all times to Banca Strait; and there is sometimes less risk of small vessels encountering pirates in these straits, than to the westward of Banca.

MACCLESFIELD STRAIT, being wider and better known, is more frequented than Clements Strait. The south entrance is bounded on the west side by Pulo Lepa, and on the east side by the Vansittart Shoals and the group of islets to the northward. Pulo Lepa was formerly supposed to be a part of Banca, but is now ascertained to be separated from it by a narrow channel navigable for boats. The S. E. point of Pulo Lepa is called Entrance Point, and is in lat. 3° 2′ S., lon. 106° 54′ E., or 2′ East from Batavia by chronometer; it bears from the Two Brothers N. N. E. 46 leagues. Macclesfield Strait. Entrance Point.

If a ship be in want of fresh water, she may anchor about a mile to the N. E. of Entrance Point, and get water from some of the small rivers in the bight between Entrance Point and Rocky Point, where there are sandy beaches: but an armed boat should be there, ready to protect the watering party, in case of any piratical proas coming round Rocky Point from the westward. Captain Ross took in water from the creek, or small river, about 2 miles to the North of Entrance Point, which was a little tinged with a red colour, but produced no pernicious effect.

ROCKY POINT, the N. E. point of Pulo Lepa, is about 2 leagues to the northward of Entrance Point, having clusters of rocks, with gaps of deep water of 8 and 10 fathoms between them, stretching out to N. Eastward nearly 3 miles; they are of Rocky Point.

considerable extent, covered at high water, but at low tide many of the rocks are visible. It is advisable to approach them no nearer than 16 fathoms, for the Warren Hastings struck on one of them with Entrance Point bearing S. S.W., and the north extreme of the three islands to the N.W. of Rocky Point N.W. by W. ½ W., having shoaled from 15 fathoms to 4 fathoms at one cast of the lead.

In passing the eastern extremity of these rocks, Entrance Point should not be brought to the southward of S. 31° W., until abreast of the west point of Pulo Leat, where the soundings are generally from 20 to 28 fathoms, if not too near Discovery Rock, and decreasing to either side. The small island off the west point of Pulo Leat is joined to it by a reef, which should have a berth of 1 or 2 miles in passing, but not more than 2 or 2½ miles, in order to avoid Discovery Rock, lying nearly in mid-channel; and from the north point of Pulo Leat, a reef projects to the northward, and another to the westward about 1½ miles. A ship will clear the latter, if the west point of the small island contiguous to Pulo Leat is not brought to the westward of S. 7° W.

If bound through Macclesfield Strait in the southerly monsoon, pass to the eastward of the Two Brothers, then steer for the strait, giving a berth to the Brouwers Shoals: the soundings will generally be regular in the fair track, from 10 to 15 fathoms, soft bottom. The south end of Banca, having great overfalls from 20 to 5 fathoms off it in some places, should not be approached nearer than 4½ leagues; for there is a 4½ fathoms bank in lat. 3° 19′ S., distant about 13 miles from the nearest part of Banca, and bearing South from a remarkable hummock. About 3 leagues N. N. E. and N. Eastward from this bank, there are two 5 fathoms banks, one of which bears from Entrance Point S. W. by S., and the southernmost S. by W.: the remarkable hummock, standing upon a *long*, *low* point of Banca, when it can be seen clear of the high land bearing N. 25° W., is a mark for both these banks. To avoid them, and the other shoal banks off this coast, keep the low land of Banca, which joins the hills, sunk from the deck until Entrance Point bears N. by E.; then steer to the N. N. Eastward for the strait, observing not to bring Entrance Point to the eastward of N. by E., or N. ½ E. The Royal George, in March, 1813, steering out of the strait S.W. by W., shoaled gradually to 5¼ fathoms, then tacked to the eastward with Entrance Point bearing N. by W., Rocky Point N. ½ W., and the west point of Pulo Leat N. 20° E.

Fairlie Rock.

FAIRLIE ROCK, in lat. 3° 27′ S., lon. 107° 1′ E., bearing about S. by E. ½ E., 8½ or 9 leagues from Entrance Point, or 7 miles East of the point, is the southernmost danger on the east side the passage, in approaching the strait from S. Westward. This danger was discovered by the Company's ship Fairlie, at 1 A.M., April 21st, 1813, when she grounded on it; it was found to be a coral shoal, about half or three-quarters of a cable's length in diameter, with only 6, 5, and 4 feet water on its centre, and overfalls of 7 to 16 fathoms rocky bottom, close to it all round.

At anchor in 6½ fathoms at day-light, very near the rock bearing from S. S.W. to S.W., the southernmost extreme of Banca bore N. by W. ½ W., and Shoal Water Island N. E. by E., just in sight from the deck.

This rock was also examined by Captain Ross, in the Company's surveying ship Discovery, July 5th, 1814, who found 8, 9, and 12 fathoms water within 50 yards of it, decreasing to 7½ fathoms at the distance of three-quarters of a mile to the S. S. Westward; the ground was soft about the rock, but sandy at a little distance all round, and the sea shewed small breakers over it at this time.

When at anchor in $7\frac{1}{4}$ fathoms, about three-quarters of a mile from the breakers, bearing N. N. E. $\frac{1}{4}$ E., Shoal Water Island bore N. E. by E., and by observations at noon, with four sextants, made the rock in lat. 3° 27′ 13″ S., lon. 107° 2′ 53″ E., or 9′ 3″ East of the Island Edam, by mean of five chronometers agreeing within a few seconds of longitude.

To avoid this danger, in leaving Macclesfield Strait in the evening, when clear of the $2\frac{1}{2}$ fathoms bank, a S. $\frac{1}{2}$ W. or S. by W. course ought to be made good, till at least 10 leagues past Entrance Point (for in April the current was found to set to the eastward), taking care to sink Shoal Water Island from the deck of a large ship by the time it bears N. E. by E., it being the only land distinctly seen from the Fairlie Rock.

THE TWO-AND-A-HALF FATHOMS BANK, discovered by Captain Ross, and bearing South 6 or $6\frac{1}{2}$ miles from Entrance Point, is much in the way of ships approaching from southward in thick weather, and other patches, of 5 and 6 fathoms, lie near it to the N. Westward. The channel is about 7 or 8 miles wide between the Two-and-a-Half Fathoms Bank and the Vansittart Shoals; and the soundings decrease to 9, 8, and 7 fathoms close to the former, and deepen to 20 or 24 fathoms on the eastern side near the Vansittart Shoals. Two-and-a-Half-Fathoms Bank.

VANSITTART SHOALS, lying about 4 leagues to the S. Eastward of Entrance Point, together with the last-mentioned danger, render the approach to the strait very dangerous in thick weather, for although the sea breaks on several of them at low water, they are not visible when the tide is high. These shoals consist of nine or ten different patches, stretching from lat. 3° 4′ to 3° $10\frac{1}{2}$′ S., and are 4 or $4\frac{1}{2}$ miles in breadth, at the south part, where, at the S. E. extremity, one of the patches is dry at half ebb. To the eastward and southward of them, the soundings are irregular from 10 to 20 fathoms; on the west side, the depths near them are generally from 22 to 28 fathoms, decreasing towards Banca, the bottom mostly coarse sand, shells, and stones. To the N. N. Eastward of these shoals, between them and Pulo Leat, are the islets which form Clements Strait, hereafter to be described. These islets, from their appearance and position, are respectively named as follows: Low Island, Saddle Island, Sandy Island, and Barn Island, on the West; and a little further eastward, Table Island, South Island, and North Island. Vansittart Shoals.

Sandy Island, on with the eastern extreme of Pulo Leat, and the south points of South and Saddle Islands touching, are marks for the N. E. extremity of these shoals.

DISCOVERY ROCK, on which a Portuguese ship from Macao was wrecked in 1816, and the Alnwick Castle narrowly escaped, by tacking on the edge of it in $5\frac{3}{4}$ fathoms, in 1810: but its existence was not exactly known, until Captain Ross explored it in the Company's surveying ship Discovery, January 18th, 1813, and of which he gives the following description. Discovery Rock.

I once before passed very near the situation of this rock, without perceiving any indication of danger; but while passing at this time, observed a breaker, at low water spring tide, which, on examination, was found to be on a sunken coral rock, in diameter about 30 yards, having only 2 feet water upon it, with perpendicular sides, as within a boat's length of it there are 7 fathoms water.

Although there was so little water over the rock, and a small swell at this time, yet the sea did not break upon it above once in an hour. The depth about the rock is

20 fathoms, but a rocky bank or ridge projects from it to the eastward about a quarter of a mile, with 6, 7, 10, and 15 fathoms on its eastern extremity.

From the rock, Entrance Point bears S. 17° W., *False* Rocky Point, which is situated between the *True* Rocky Point and Entrance Point, S. 22° 51′ W., Saddle Island S. 59° 36′ E., south point of Pulo Leat or Middle Island S. 80° 46′ E., Highest Tuft of Trees on Pulo Leat N. 89° 39′ E., north end of Pulo Leat N. 59° 39′ E., Hummock over Tanjong Brekat N. 18° 30′ E., and it is distant 4 miles from the small island that lies close to the west point of Pulo Leat, and 4 miles from Rocky Point.

Pulo Leat.

PULO LEAT or PULO PONGOH, called also Middle Island, extending from lat. 2° 49′ to 2° 5′ S., the principal island which separates Macclesfield Strait from Clements Strait, has several hills, making it appear like different islands when first seen; it is of considerable size, and is surrounded by reefs and rocks.

Alceste Rock.

ALCESTE ROCK, upon which H. M. S. Alceste struck, and was wrecked, 7 A.M. February 18th, 1817, when returning from China with Lord Amherst and suite on board,* is a small coral shoal, having about 2 fathoms water on its shoalest part at low tide, from which part the west side of Gaspar Island bore N. 8° E., North end of Pulo Leat S. 40° E., and Saddle Island,† the small island at the west part of Pulo Leat, S. 5° W., distant from the nearest part of Pulo Leat between 3 and 4 miles. This dangerous rock has close to it 17 and 18 fathoms water, which are the usual depths to the northward between it and Gaspar Island; and although it lies in the hitherto supposed fair track of ships steering down on the east side of that island for Macclesfield Strait, yet to the officers of the Alceste it appeared to be only the outer or N. Westernmost patch of the coral spits which project far out from the North and N.W. parts of Pulo Leat, having gaps of deep water between some of them.

Coral spits near Pulo Leat.

Great caution is indispensable in navigating these straits, as it is not improbable that other sunken rocks may exist which have not yet been discovered.

To enter Macclesfield Strait from northward.

Ships coming from the northward towards Macclesfield Strait, when N.W. winds prevail, and strong S.E. currents setting through between Gaspar Island and Pulo Leat, in January, February, and March, should, if they do not pass on the west side of Gaspar Island, borrow near its eastern side, and after rounding it, haul in to the westward for Tanjong Brekat, to counteract the S. E. current, and give a berth to Alceste Rock: therefore, a ship should not approach the north part of Pulo Leat within 4 or 5 miles, until the small island at its western extremity bears to the eastward of South, on which bearing it should be kept in steering southward for the narrow part of the strait, formed by Discovery Rock to the westward, and the small island off Pulo Leat to the eastward, the latter of which may be passed at the distance of 1½ or 2 miles.

Tanjong Brekat

TANJONG BREKAT, in lat. 2° 35′ S., a long projecting point, with a hummock close over it, is about 7 leagues nearly N. ½ W. from Rocky Point; the coast between these points forms a very deep and extensive bay, having in it shoal water and several dangers, with three islands, already mentioned, at the southern part. About 4 miles

* Two of her boats, the cutter and barge, with Lord Amherst and suite, arrived at Batavia three days after the loss of the frigate. The crew remained on Pulo Leat about fourteen days, and were taken off the island by Lieutenant Davidson, who had been dispatched from Batavia in the Ternate for that purpose. The Ternate had much difficulty in entering the strait against the strong southerly current.

† Called by Captain Ross, West Island, and by the Malays, Pulo Chellaka, *i. e.* Misfortune Island.

to the S. S. E. of Tanjong Brekat, lies a 3 fathoms bank, which must be avoided, and borrow not into the bay, in passing from Pulo Leat to the northward. About $4\frac{1}{2}$ or 5 leagues inland, to the westward of Tanjong Brekat, there is a conspicuous mountain on Banca, usually called Tanjong Brekat Mountain. Shoals near it

THE SHOAL WATER ISLANDS, in about lat. 3° 20′ S., are two small islands *close together*, bearing about South 7 leagues from South Island, and about W. by S. $\frac{1}{2}$ S. 5 leagues from the S.W. point of Billiton; they are surrounded by a shoal, and other shoals project nearly 4 leagues to the southward, with breakers on them, and are partly dry at low water. Shoal Water Islands.

The following islands, which lie to the south-eastward of Pulo Leat, form the south entrance of Clements Strait.

Sandy Island, about 5 miles S. by E. from the south-east end of Pulo Leat, is small and low, and about $1\frac{1}{2}$ miles E. by N. from it lies Barn Island. South Island, about 6 miles E. by S. from Barn Island, is in lat. 3° 0′ S., and North Island bears from South Island North, about 2 miles. Table Island bears about E. $\frac{1}{2}$ S., distant 3 miles from South Island. The proper channel into Clements Strait is bounded by these three islands to the eastward, and by Barn Island and Saddle Island to the westward. Saddle Island, named from two hills on it, is about 3 miles to the S.E. of Barn Island, and 4 miles from South Island, with Low Island about a mile to the westward. Islands forming the South entrance of Clements Strait.

Embleton Shoal, in lat. 3° $18\frac{1}{2}$′ S., lon. 107° 11′ E., discovered in July, 1833, by Captain Spratly, of the ship York, is a bank of considerable extent above water, which bears from Shoal Water Island in the entrance of Clements Strait, N.W. $\frac{1}{2}$ N., by compass, distant about 3 miles, and S. $\frac{1}{4}$ E. from the peak of Saddle Island. Close to its western edge, and to the northward, the depth was 10 fathoms, and there appeared to be deep water between the shoal and Shoal Water Island. Embleton Shoal.

CAMDEN SHOAL, near the S.W. end of the Island Billiton, appears to be a new discovery, seen by Captain Clayton, on his passage from Sourabaya towards Singapore, in the ship Camden. July 24th, 1833, intending to pass through Clements Strait, he made Shoe Island, and steered N.W. to go between Shoal Water Island and the long low Island,* off the S.W. end of Billiton. At $6\frac{1}{2}$ P.M. Shoe Island bore S.E. by E.; then saw islands bearing N.N.W., called Lestock Islands by Captain Clayton: at 8 P.M. shortened sail and hove to during the night. At day-light, after making sail, and when Lestock Islands bore N.E. by E. distant about 6 miles, a shoal was observed close to the ship, in extent about a third of a mile, having on its centre several black rocks. By taking the relative bearings of the land, and the run to Shoal Water Island, the shoal is considered to be in lat. 3° 26′ S., lon. 107° 36′ E., lying directly in the track of ships coming from the eastward towards Clements or Gaspar Straits. Camden Shoal.

LONG ISLAND, about 6 leagues to the eastward of Pulo Leat, and contiguous to the west coast of Billiton, bounds Clements Strait on the east side; it is of considerable extent, with several islets and dangers surrounding it. To the southward of it there is a group of low islands, and another long low island† close to the S.W. end of Billiton. Long Island.

* This island is not shewn in the chart.

† This island is not shewn in the chart, but the coast of Billiton is stated to be but imperfectly known.

General Hewitt Rock.

THE GENERAL HEWITT ROCK, on which the ship of this name struck in August, 1820, on her passage towards China, lies in the fair channel, at the northern part of Clements Strait. This rock was found to extend about a ship's length, and to be 8 or 10 fathoms in breadth, the coral rocks visible under the ship's bottom, with 15 or 16 feet water over them at the shoalest part, and from 12 to 15 fathoms water close to it all round. When aground upon the rock, the westernmost part of South Island was just visible on with the west end of North Island, extremes of Pulo Leat from N. 67° W. to S. 77° W., Barn Island S. 34° W., the Mountain of Tanjong Brekat well clear of the north end of Pulo Leat. The rock is 4 or 4½ miles distant from North Island, and it will be avoided by keeping the high part of South Island open with the west end of North Island.

Passage through Macclesfield Strait to the northward.

Excepting Macclesfield Strait, Clements Strait may be considered the best passage amongst the islands which lie between the S.E. point of Banca and Billiton, if a ship keep in the fair channel, where the depths are generally from 16 to 20 fathoms. But care is required to avoid the following shoals, lately discovered near Shoal Water Island, and the south-west part of Billiton; and there probably exist other dangers hereabout not yet known.

If bound into Macclesfield Strait from the southward, to avoid the Fairlie Rock, steer for the S.E. part of Banca, and having brought Entrance Point to bear about North, or N. ½ W., steer N. by E. and N.N.E. for the strait, keeping Entrance Point to the westward of N. ½ W. or N. by W. when within 3 leagues of it, to avoid the 2½ fathoms bank; or the highest part of the trees within Rocky Point kept open to the eastward of Entrance Point, leads clear of the 2½ fathoms bank, and also of a 5 fathoms bank, about 2 miles north of it. With a working wind, to avoid Vansittart Shoals, do not bring Entrance Point to the westward of N.W. ½ N. until the Peak of Saddle Island bears N.E. by E., or by keeping Pulo Leat a little to the eastward of North, they will be avoided. When near the N.W. part of these shoals, the west end of Pulo Leat may be brought N. ½ W., but not more westerly until South Island is open to the northward of Saddle and Low Islands; with the northern extremes of these, and the south part of South Island in one bearing E. 19° N., is just clear of the northernmost shoals. The S. Eastern extremity of Vansittart Shoals bears S. ½ W. from Barn Island, and N. 33° W. from Shoal Water Island. The S. Western extremity of them bears S. 26° W. from Barn Island, and N. 48° W. from Shoal Water Island.

Having entered the channel, which is about 3 leagues wide, betwixt Entrance Point and these shoals, a course should be steered for the small island at the west point of Pulo Leat, to avoid the dangers contiguous to the Banca shore. One of these is a bank to the northward of Entrance Point, but the reefs off Rocky Point are most in the way of ships, particularly the following danger lying nearly in mid-channel.

H. M. S. Pylades, Captain Anson, in making the passage through Macclesfield Strait in 1840, steered in for Banca Island well to the westward of Entrance Point, to avoid the Fairlie Rock and the shoals to the northward of it; and passing inside the two-fathoms bank in irregular depths from 10 to 6 fathoms, rocky and hard sandy bottom, coasted along at the distance of two miles until abreast of Entrance Point. From off the point she then stood across for the south side of Pulo Leat, until the islet off its western shore bore North; then steering for it she ran along shore at the distance of two miles in soundings of from 18 to 22 fathoms. In the narrowest part of the channel, between Discovery Rock and the Islet, she had a cast of 14 fathoms, where the chart shewed 19 and 20, and close to the rock 15. Fearing too near an approach

to this danger, she rounded to with her head towards Pulo Leat and sent a boat to sound, but was quickly swept clear of the strait by the north-easterly current.

GASPAR ISLAND, or PULO GLASSA, in lat. 2° 25′ S., lon. 107° 6′ E., or 14 miles East from Batavia by chronometers, bears North from the eastern part of Pulo Leat, distant 8 leagues, and lies about 5½ leagues N. E. by E. from Tanjong Brekat. It is the principal mark in sailing to or from the northern part of these straits, for avoiding the shoals, having a peaked hill on it, that may be seen about 10 leagues. There is a rocky islet, with some trees on it, and rocks contiguous, distant about 1½ or 2 miles from the west side of Gaspar Island, which is on with the peak bearing E. 5° S. Gaspar Island.

CANNING ROCK, first discovered in April, 1825, by Captain P. Baylis, in the Company's ship Canning, that ship having grounded on it during her passage homeward from China, is in the *direct route* of ships proceeding through the Straits of Gaspar, and is therefore very dangerous for large ships, there being only 3¼ or 3 fathoms water on its shoalest part. When aground upon the rock, the peak of Gaspar Island bore S. 78° W. distant 9½ or 10 miles; Tanjong Brekat S. 64° W.; Tanjong Brekat Mountain to the westward of Tanjong Brekat S. 74° W.; Long Island S. 23° E.; islet off Long Island S. 16° E.: which makes it in latitude 2° 23′ or 2° 23½′ S., lon. 107° 14′ E., by chronometers. Mr. Smith, the officer sent to examine the extent of the danger, found it to be composed of large patches of coral, extending about 100 yards in a N. E. and S.W. direction, and not more than 50 yards from East to West, steep to, having from 17 to 20 fathoms water close to its edge all round. When aground, the soundings under the ship's larboard fore chains were 9 fathoms; at the starboard main chains 5¼ fathoms; at the larboard main chains 3¼ fathoms; close under the counter 4 fathoms; and about 20 yards from the larboard quarter 3 fathoms, or 19 feet water, upon a small patch. This danger not being visible from the main top at a quarter of a mile distant, and being greatly in the way of ships approaching the Straits of Gaspar from the northward, requires caution in thick weather. Vessels, after passing the latitude of the Magdalen Shoal, ought to make Gaspar Island bearing well to the southward, and then haul within 5 or 6 miles, or nearer, before it bears W. S.W., in order to give a wide berth to this danger. Canning Rock.

TREE ISLAND,* bearing from Gaspar Peak S.W. by W. ½ W. distant 7 miles, is a barren rock, with two or three trees on its summit, giving it the appearance of a ship under sail, and making it visible about 5 leagues. A reef extends to the northward and southward from it about half a mile, and a rock, about the height of a longboat, lies the same distance from it to the S. Eastward. Tree Island.

There appears to be a great rise and fall of tide sometimes at these islands, for the Vansittart's boat landed at Tree Island, and found a rise of about 3 fathoms perpendicular, between 8 A.M. and 5 P.M.; and it appeared to be high water at 5 or 6 o'clock in the evening, the moon then 1½ days past change. During the strength of the N.E. monsoon, in the China sea, the winds betwixt Banca and the S.W. part of Borneo prevail from N. Westward; and the current then runs along the east coast of Banca through Gaspar Straits to the S. Eastward, sometimes from 2 to 3 miles per hour. In fine weather and light winds, a kind of tide is experienced in the straits, which is seldom very regular. Tides.

Being in Macclesfield Strait, abreast the small island at the west point of Pulo Leat, Directions.

* There is a cave here, where the Malays come to collect birds' nests, which are also probably found on the other islands.

at $1\frac{1}{2}$ to $2\frac{1}{2}$ miles' distance, steer about North, observing not to bring Tanjong Brekat to the northward of N. N.W. $\frac{1}{2}$ W., nor to shoal under 14 or 15 fathoms in the entrance of the great bay between it and Rocky Point. When Tree Island is seen, steer to pass to the eastward of Gaspar Island, at any convenient distance, from 2 or 3, to 5 miles, but not more than 6 or 7 miles at most, on account of the Canning Rock; then steer to the northward, observing not to bring Gaspar Island to the eastward of South while it is visible, in order to avoid the following shoals, which render the passage to the westward of these islands rather intricate. The passage to the eastward of Gaspar Island is usually chosen, for, excepting the Canning Rock, it is thought free of danger from that island across to the isles which lie off the N.W. end of Billiton.

Warren Hastings Shoal.

THE WARREN HASTINGS SHOAL is about $2\frac{1}{2}$ miles in extent, nearly N. by W. and S. by E., with only $1\frac{1}{2}$ fathoms on it in some places: the Warren Hastings, when aground on a projecting part at its eastern edge, had the high land of Banca bearing S. 58° W., Tanjong Brekat S. 22° W., centre of Gaspar Island E. 20° S., and Tree Island S. 17° E., distant about 7 miles. To avoid the shoal on the west side, if passing between it and Banca, Tree Island must be kept to the eastward of S. S. E., when Gaspar Island bears from E. by S. to E. S. E., or until at least $3\frac{1}{2}$ leagues to the N. Westward of Tree Island. Another good mark is, to steer to the northward with Tanjong Brekat bearing between South and S. by W., and not bring it to the westward of the latter bearing, when passing the shoal. Having passed to the westward of the Warren Hastings Shoal, steer a North course from Tanjong Brekat, to pass betwixt the Vansittart and Belvidere Shoals.

Directions.

Belvidere Shoals.

THE BELVIDERE SHOALS, the S.W. end, is in lat. 2° 15′ S., and bears from Gaspar Island Peak N. N.W. $\frac{1}{2}$ W., distant about 10 miles; they extend from thence to the N. Eastward about 4 miles, being composed of several coral patches, having from 6 to 10 feet water on them; and a *Black Rock above water* at the N. Eastern extremity. The sea breaks on them when there is much swell, and they may be easily avoided in day-light, with a good look-out, particularly as some of the patches are dry at low water; an American ship, however, was wrecked on these shoals, also a large Chinese junk, part of whose crew reached Gaspar Island, and others, who were found floating on fragments of the wreck, were saved by the laudable exertions of a country ship belonging to Calcutta.

Vansittart Shoal.

THE VANSITTART SHOAL,* in lat. 2° 11′ S., bearing from Gaspar Island Peak N.W. by W., distant 25 miles, and 5 leagues to the westward of the Belvidere Shoals, is composed of coral rock, and very dangerous: as the depths on it are 3 and $3\frac{1}{2}$ fathoms, and the water not always discoloured, the danger is not visible.

Directions.

To pass betwixt the Belvidere Shoals, and the Vansittart Shoal, when Gaspar Island is visible, the Peak kept between S. E. by S. and S. E. $\frac{1}{2}$ E. will guide a ship safely through; afterwards, she should steer between N.W. by N. and N. N.W., to avoid several other dangers near Banca, and the Magdalen Shoal to the eastward. These shoals, to the northward and N. Westward of Gaspar Island, are mostly all steep to, having from 17 to 20 fathoms water close to their edges, and nearly the same depths

* The Vansittart was lost by striking on this shoal, after having nearly completed a survey of Macclesfield Strait, on her passage towards China, in 1789: since Captain L. Wilson made that survey, other dangers have been discovered farther to the northward, which render the passage West of Gaspar Island unsafe in thick weather; and it is not improbable that still more may exist in this dangerous sea to the eastward of Banca.

in the channels between them: but in approaching the shoals adjacent to Banca, the water *generally* shoals to 12 or 14 fathoms, rocky bottom; a ship ought therefore not to borrow under 14 or 15 fathoms towards Banca,* after having passed Gaspar Island, if the passage to the westward of the outer or northern shoals is followed: this passage, however, is not considered so good as that to the eastward of them and near to Gaspar Island.

Magdalen Shoal.

THE MAGDALEN SHOAL, discovered by Captain John Cowman, November 24th, 1806, on his passage from China towards New York, in the American ship Magdalen, is one of the outermost shoals, to the northward of Gaspar Straits, and, being greatly in the way of ships coming from the northward, requires a cautious approach in thick weather. He was within half a cable's length of the shoal before it was perceived; it was found to consist of two patches of coral rock, about 80 fathoms in length, and 15 fathoms in breadth, with deep water between them. The boat found 12 feet water upon them, although in some parts there may be less, and about half a cable's length from the shoal there were 19, 20, and 21 fathoms water. Latitude observed at noon, 1° 56½′ S., the summit of Gaspar Island Peak then in sight from the deck, bearing S. by E., distant 10½ leagues. By keeping Gaspar Peak S. ½ E. or South, the shoal will be left to the westward in passing; but Gaspar Peak will not be discernible from the shoal unless the weather is clear.

Captain Ross, in July, 1814, endeavoured to find this shoal without success; but during his survey of Gaspar Straits, in 1818, he found, and explored it: it was ascertained to be of small extent, and situated in lat. 2° 0′ S., bearing from Gaspar Island N. ¾ W.

Severn Shoal.

THE SEVERN SHOAL, discovered by Captain John Whetton, in the American ship Severn, from New York, May 23rd, 1802, is much in the way of ships running from Pulo Toty towards Gaspar Island. At sun-set, Gaspar Peak bore S. E. ¾ S., distant 4½ or 5 leagues; from this situation they steered N.W. ½ N., 35 miles to daylight, then struck on a coral shoal, and got off it on the following flood, after lightening the ship of 30 tons of ballast, and carrying out a bower anchor. The shoal appeared to extend N. N. E. and S. S.W., about 2 or 3 miles, and on the rocky part, where the ship grounded, there was only 10 feet, which was the least water found. When aground, the lat. observed was 1° 40′ S., the hills on Banca appearing detached from each other, like islands, and bearing from S.W. by S. ¼ S., to S.W. by W.; the mountain Goonong Marass was seen inland beyond the other hills, and the nearest land seemed distant about 7 leagues from the shoal. The Colombian, American ship, belonging to New York, returning from Canton in March, 1824, in working to the southward for the Straits of Gaspar, grounded on the Severn Shoal, and bilged: the crew reached Mintow on Banca, in the long-boat, after suffering much fatigue.

Breakers seen by Capt. Hall.

Captain Hall, of the barque Catherine, in September, 1840, when at anchor in 18 fathoms water, in lat. 1° 31′ S., lon. 107° 1′ E., saw breakers on a shoal bearing N. N. E. ½ E. from him, distant half a mile, and extending in an E. by S. direction, in one continuous line for about 3 miles.†

* Although this caution has been hitherto thought necessary, Captain Robert Scott states that, in the ship Warren Hastings, he hauled in with the coast of Banca a little to the northward of Tanjong Brekat, then coasted along to the northward, keeping generally in 11 fathoms water, without perceiving any appearance of shoals, or any danger except contiguous to the shore, although a constant look-out was kept at the mast-head. There are, however, dangers in 12 or 13 fathoms, to the northward of Pulo Panjang, and off Tanjang Ryah, shortly to be described.

† See *Naut. Mag.* for 1841, p. 521.

VEGAS SHOAL, to the northward of Gaspar Strait, was discovered in September, 1826, by Captain Jose Antonio de Vega, of the Spanish frigate Vellos, which ship struck and grounded on it, when bound to Manilla, and by carrying out an anchor she was hove off the shoal. Its extent is little more than a ship's length, with depths from 22 to 18 feet water, and near to it, soundings of 9, 11, 17, and 22 fathoms. This dangerous shoal Captain de Vega made in lat. 1° 10′ S., lon. 106° 34′ E., by chronometer, measured from Gaspar Island, which he passed on the preceding day, and the shoal bears N. 20° W. from that island, distant about 27 leagues, being much in the way of ships, when running for the Straits of Gaspar from the northward.

Captain Ingram, of the Marquis of Hastings, saw this shoal, April 28th, 1832, and thought it a new discovery; he made it in lat. 1° 6′ S., lon. 106° 31′ E., and Mr. Harris, at the same time, made it in lat. 1° 4′ S., lon. 106° 37′ E. : the mean of these, and Captain Vega's observations will place this dangerous shoal in lat. 1° 6¾′ S., lon. 106° 34′ E. Captain Ingram found only 9 feet water upon the shoalest part, which probably might be at low water spring tides; as Captain Vega had not less than 18 feet; perhaps when the tide was high.

Other shoals near Banca.

OTHER SHOALS, whose positions are not correctly known, lie nearer the coast of Banca than those last mentioned; these are avoided by not coming under 16 fathoms; the bottom, in such case, will be mostly mud, but generally foul and rocky under 15 fathoms. The Sullivan, from China, hauling in to get a sight of Banca, December 25th, 1784, during thick weather, after shoaling to 13½ fathoms, rocky bottom, saw three shoals with breakers, one bearing S. S.W. three miles, one S. E. by S. three miles, another E. N. E. about four miles; and there appeared amongst the breakers some rocks above water. These dangers seem to be about 4 leagues off Banca, and in about lat. 2° 3′ S., a little to the northward of Pulo Panjang; but the weather being very thick, the land was not seen at the time the shoals were visible. With the small island off Pulo Panjang bearing S. by W. ¼ W., 5 miles distant, and the eastern extreme of Banca, (being the toe of the mountain over Tanjong Brekat,) S. S. E. ½ E., the General Elliott got entangled with shoals, and had 8 fathoms close to them, in the situation described above; but as the Sullivan had deeper water, the shoals seen by her may be others at a greater distance from the coast.*

The Hillsborough, returning from China towards Macclesfield Strait, by keeping too close to the coast of Banca, struck upon a rock at 4 P.M., March 27th, 1788, having only 3 feet water on the shoalest part; and when the ship was aground forward, there were 13 fathoms at the main chains on both sides. After getting off, she anchored in 14 fathoms a little to the westward of the reef, extremes of Banca from W.N.W. to S.E., five small islands bearing South, and in about lat. 2° 3′ S.; the boat on the south end of the reef bore from the ship about S.E., and when on the other end, about N.E.

The five islands bearing South from the ship, when at anchor near the reef, must have either been Pulo Panjang and the islet near it, or Pulo Colowy and the islets contiguous, about 3 leagues to the south-eastward of Pulo Panjang; it seems, therefore, very probable, that the reef on which this ship struck was one of those seen in the Sullivan.

* There appears to be some mistake in the bearings from the General Elliot here given, as they would place her 20, and not 5 miles off the small island, near Panjang; unless by the eastern extreme of Banca, then visible, and here called "the toe of the mountain over Tanjong Brekat," was meant some hill 10 or 12 miles inland, to the westward of that point.

A little farther to the northward, about 4 leagues off Banca, in lat. 1° 55′ S., there is a bank with overfalls, from 13 to 7 fathoms, and probably less water, over which the General Elliot passed.

PALMER SHOAL is probably the bank last mentioned, and the following description of it is given by Captain Boddam, of the ship Palmer. August 27th, 1811, at 45 minutes P.M. the ship suddenly struck, having sounded about 5 minutes before in 14 fathoms; saw discoloured water on both sides under the quarters, had then 10 fathoms by the lead, the ship having passed rapidly over the shoal; next cast had 11, 10, 11 fathoms; then anchored, the wind blowing fresh from S.E. against us. When at anchor, Tanjong Ryah bore W. N.W., distant about 5 leagues, the southernmost low islands of Pulo Panjang S. S. W. $\frac{3}{4}$ W., distant 12 or 14 miles, the shoal on which we struck bearing about N. N. E. $2\frac{1}{2}$ miles, according to the distance run until anchoring. Palmer Shoal.

Diedsrika Shoal, with 3 feet water on it, in lat. 2° 3′ S., and having 13 and 14 fathoms close to, is thought to lie about $3\frac{1}{2}$ leagues to the N.E. of Pulo Panjang, and 5 miles to the southward of Palmer Shoal. About $4\frac{1}{2}$ miles to the westward of Diedsrika Shoal is Robert Shoal, dry at low tide, with 10 fathoms near it, betwixt which and Pulo Panjang, and from thence to the coast, there are numerous rocky shoals, with from 7 to 5 fathoms water between them. Other Shoals.

THE NORTH-EAST COAST OF BANCA was surveyed, and correctly delineated, by the late Lieutenant James Robinson, in his excellent chart of the northern part of that island. There are many hills along this coast near the sea, and some mountains inland; one of these is about 4 leagues West from Tanjong Brekat, and about 6 leagues to the westward of Tanjong Ryah, in lat. 1° 53′ S., lon. 105° 52′ E., stands the double-peaked mountain, GOONONG MARASS, the largest on the north part of Banca. North east coast of Banca. Goonong Marass Mountain.

From Tanjong Brekat, the coast in several parts is fronted by shoals 2 or 3 miles off shore, and it extends in a W.N.W. direction about 14 leagues. Pulo Panjang lies about 2 leagues off shore, in lat. 2° 9′ S.; it is surrounded by reefs, and has the small island of Poojoor near it on the east side, with a great reef and foul ground stretching 4 leagues in a south-easterly direction, upon which are several islands; Pulo Booar, or Colowy, in lat. 2° 17′ S., is the easternmost of these, and N. E. by N. from it, about 6 miles, lies Goat's Rocky Shoal of $1\frac{1}{2}$ fathoms, from which Vansittart Shoal bears about E. by N., distant 4 leagues; E. $\frac{1}{2}$ S. from Pulo Booar, about 4 miles distant, lies Horse Shoal, nearly dry at low tide, having 7 and 8 fathoms water between it and the Sisters Shoals, which lie 2 miles E.N.E. from Pulo Booar, and are likewise nearly dry at low tide.* Pulo Panjang and dangers.

From the point opposite to Pulo Panjang to Tanjong Ryah, the coast trends to the northward, and is fortified by reefs and rocky patches to the distance of 2 and 3 leagues: Marawan river, called also Pancul Penang, a place affording tin, is situated about W. by N. $\frac{1}{2}$ N. from Pulo Panjang, and cannot be approached by ships without great care, on account of surrounding dangers. Marawan.

The following remarks have been furnished by a navigator of local experience. If bound for Pancul Penang (Marawan) or Batio Rousa Roads, you may approach Tanjong Ryah to 7 fathoms, Carang Blusor, which is visible from the deck 5 miles, to 5 or 7 fathoms $1\frac{1}{2}$ miles distant; when to the southward of this rock you should stand

* Pulo Booar and Pulo Colowy are here spoken of as the same island; but, according to the chart, these names are applied to different islands, the latter being in the position here described, and the former bearing E. by N. 7 miles from it. The shoals here, named the Horse and the Sisters, do not appear in the chart.—ED.

off no farther than 10 or 11 fathoms, and if clear, will see Pulo Panjang or Pulo Toomoosfere; you may bring the extremes of both to bear South until the peak, which is the north-westernmost of a range of inland hills, bears S.W. ½ W., then steer direct for it till Pulo Talouwar is open to the westward of Pulo Panjang nearly its own length, Pulo Panjang west point S.E. by S. You may anchor in 4¼ fathoms, clear ground; the river will then bear W. ½ N., a range of rocks partly dry at low water to the S.E., distant half a mile. Good water may be got at Pancul Penang.

A brig, that went from Mintow to Marawan for tin, got entangled in the numerous shoals near that place, although she had a Malay pilot on board, and grounded on one of them, which obliged her to lie near Pulo Panjang, distant about 3 leagues from Marawan, where she received her cargo.

Tanjong Ryah.

TANJONG RYAH, in lat. 1° 55′ S., lon. 106° 14′ E., bearing from Tanjong Brekat nearly N.W., distant about 19 leagues, has two hummocks on it, and the coast between these headlands forms a concavity, with several islands in it, and the dangers already mentioned.

Black Rock Reef.

Black Rock Reef, situated 4 or 5 miles to the southward and S.S. Eastward of Tanjong Ryah, is very extensive, with only 3 feet water, rocky bottom, in some places; but there are also rocks above water on it about 14 feet high. This shoal, and also the reef fronting Tanjong Ryah, have 9 and 10 fathoms water near them; both were examined by Captain Waterman, of the ship Volunteer, in July, 1831. From the highest rock of Black Rock Reef, Gooning Marass was open to the southward of Tanjong Ryah Hills, bearing W. ½ N., easternmost hill of Tanjong Ryah N.W. by W., Tanjong Tuan N.N.W. ¾ W., Songy Leat Bay (S. E. extreme) N.W. ½ N., Inner Pulo Panjang S. by E., Outer ditto S.S.E.

Songy Leat Bay.

SONGY LEAT BAY, formed by Tanjong Laing to the N. W., and Tanjong Ryah to the S. E., has good anchorage and shelter from southerly winds. The Volunteer, at anchor in 5 fathoms, white stiff clay, about three-quarters of a mile from the shore, had Goonong Marass bearing W. ½ S., Tanjong Laing, the north point of the bay, and Tanjong Tuan in one N. N. W., Tanjong Ryah Point S. E. ½ S., and Songy Leat River W. ¼ N. In entering the bay from the northward, care must be taken of a rocky shoal, with only one fathom water on it, bearing about E. ½ S. 3½ miles from the north point of the bay; and a 4 fathoms patch lies about 2 miles E. S. E. from the same point. There is also a rock, with only 4 feet on it, which must be avoided in approaching Songy Leat Bay. The marks for the rock are the Peak of Tanjong Laing bearing W. by N., and Tanjong Ryah S. ½ E.

Fresh water is difficult to be got here, as boats can only enter the river when the tide is high, and several straggling rocks fronting the entrance are then under water. Wood may be cut close to the beach, and spars of any dimensions are obtained with little difficulty in the south part of the bay, within half a mile of the shore. From the river, which is in lat. 1° 50′ S., nearly to the S. E. point of the bay, a fine sandy beach lines the shore, the soundings decreasing gradually towards it, over a clear bottom;

Tides.

this bay and the adjacent coast abounds with fine fish. The tide rises 9 feet at full and change of moon, and flows till 5 P.M. only once in 24 hours.

Coast to the northward.

The coast about Pulo Panjang, and from thence to Songy Leat Bay, is dangerous to approach; but from the latter place to Tanjong Muncooda it is more safe, as well as from thence westerly to the entrance of Calabat Bay, where again it becomes dangerous, in consequence of the rocks near the islands at the east part of the bay.

Tanjong Tuan, in lat. 1° 38′ S., has a hill on it, with several others inland, and may

be approached within half a mile; it has a small island near it, called Pulo Ponigh, and it bears from Tanjong Ryah nearly N. N.W. ½ W., about 6 leagues, the coast to the southward of it forming a bay, with Pulo Simbang, a small island, about 2 leagues S. S. Eastward from Tanjong Tuan.

TANJONG MUNCODA, in lat. 1° 28′ S., is the northernmost point of Banca, and bears from Tanjong Tuan about N.W. by W. 5 or 6 leagues; it has a small island near it, called Pulo Muncooda, with a 2 fathoms shoal about 3 miles West from the latter, and 1½ miles off shore. About 3 leagues W. by S. from Pulo Muncooda lies the entrance of Calabat Bay, having several islands in it, Pulo Punyosoo lying close to Tanjong Punyosoo, the point that bounds the east side the entrance. The bottom of Calabat Bay is said to communicate with an extensive lagoon, inland, in which there are 16 fathoms water. Country ships anchor, to procure tin, at the entrance of the bay, in 9½ or 10 fathoms, about 2 miles from Pulo Punyosoo, on with Goonong Marass, bearing S. S. E. ½ E., Goonong Calabat S. S.W. ½ W., Tanjong Malaloo, the west point of the bay, W. by S. ¼ S., the hill over it, called Goonong Malaloo, W. by S. ¾ S., and Pulo Muncooda E. ½ N. Anchorage in Calabat Bay.

Tanjong Goonting, in lat. 1° 43′ S., forms the north point of SONGY BOOLOO BAY, and is on with Monopin Hill, bearing S. S.W.; it is about 6½ leagues to the south-westward of the west point of Calabat Bay, and between them there are several other points, also two islands, called Pulo Pamooja and Pulo Proute; and two rocks, called Carang-Malan-Toole and Carang-Malan-Dooyong, which lie about a league off shore. Carang-Malan-Dooyong, the easternmost of these rocks, is the largest, being as high as a small vessel's hull, and bears N.W. by W. ½ W. from the west point of Calabat Bay, distant 4 or 5 miles; and when on with Goonong Marass and a little hill, it bears S. E. ¾ S. Carang-Malan-Toole, about the height of a boat above water, is 3 or 4 miles off shore, and about the same distance W. by S. ½ S. from the rock last-mentioned, and bears from Pulo Proute N. ½ E. Nearer the shore, lies another rock, called Carang-Malan-Goonting, which bears from Pulo Proute E. by N. ½ N., and from Carang-Malan-Dooyong W. by S. Rocks and islands.

The soundings about 2 or 3 miles outside these rocks vary from 17 to 26 fathoms, and they are steep to; but a ship may anchor to the eastward of them, off Tanjong Malaloo, in 13 fathoms, with that point S.W. by W. ½ W., Pulo Proute W.S.W. Anchorage to the eastward of the rocks.

SONGY BOOLOO, bearing E. S. E., about 5 miles from Tanjong Goonting, is the principal town near the north end of Banca, and is frequented by the country traders: the bay is about 4 leagues in extent from Tanjong Goonting to Tanjong Beeat, but has shoal water to the distance of 3 miles from the shore. Songy Booloo.

Ships in want of water may anchor under Tanjong Goonting in 5 or 6 fathoms, with it bearing N. by E. ½ E., the S.W. extreme of the bay (a long, low point) S.W. ¾ W., and the watering place, which is about 1½ miles inside Tanjong Goonting, N.E. by E. ½ E. Or a ship may anchor in 5 fathoms, abreast of Songy Booloo, off shore about 3 miles.

THE MIDDLE PASSAGE, formed between Macclesfield and Clements Straits, was formerly adopted by several ships, but it is now little frequented, being more intricate than Macclesfield Strait. A ship intending to proceed through it should, in coming from south-westward, steer betwixt Entrance Point and Vansittart Shoals towards Pulo Leat, borrowing on the east side the channel until Sandy Island is approached. There are two shoals between Barn Island and the south-east part of Pulo Middle Passage of Gaspar Straits, and thence into the China Sea.

Leat, and a passage nearly in mid-channel, by leaving a shoal on each side; but the best passage is to the eastward of them: keep therefore within a mile of the west side of Sandy Island, and bring it to bear S.W. by S.; by keeping it on this bearing, but nothing to the southward, you will pass clear to the eastward of the outer shoal, which will be easily discerned by the discoloured water, for it is dry at low tide. Having passed this shoal, a northerly course should be steered, keeping at least a league from the east side of Pulo Leat; if the weather is clear, Gaspar Island will soon be seen bearing about N. by W.; it should be passed on the east side at the distance of 2, 3, to 5 or 6 miles. Whilst Gaspar Island is visible, by not bringing it to the eastward of South, a ship will be kept in the fair channel to the eastward of the Magdalen Shoal. Being clear of the latter, by sinking Gaspar Island under the horizon, if the weather is clear, or getting into lat. 1° 50′ S., a direct course about N. N.W. may be steered, if bound into the China Sea, to pass between Pulo Aor and Pulo Domar, the latter bears from Gaspar Island N. 19° W. (*true*), distant 110 leagues. The depths in this track will increase from 18 and 20 fathoms near Gaspar Island and the adjacent shoals, to 26 or 28 fathoms eastward of Pulo Lingin, and to 30 or 34 fathoms, in approaching Pulo Aor, or Pulo Domar.

Clements Strait.

CLEMENTS STRAIT may be adopted occasionally, if winds or other circumstances be favourable, although the preference is usually given to Macclesfield Strait. If a ship, coming from the southward, intend to proceed through Clements Strait, and the wind be at S. E., she ought to steer to the westward of Shoal Water Island and the shoals to the southward of it, giving them a berth of 3 or 4 miles in passing: when clear of that island, to avoid the south-eastern extremity of the Vansittart Shoals, she must haul to the eastward until the peak of Saddle Island bears N. by E., then steer for it, and pass mid-channel betwixt it and South Island, to avoid a reef, dry at low water, distant $1\frac{1}{4}$ miles N. E. by E. from Saddle Island.

There is a channel, about 2 miles wide, betwixt the N. E. end of Vansittart Shoals and Low Island, through which a ship may proceed into Macclesfield Strait, or into the Middle Passage, if circumstances should render that necessary: and in such case, she may pass to the westward of Low Island, giving it a berth of 2 miles.

If the passage between Low Island and Barn Island be adopted, there are some dangerous spots to be avoided, which extend from Barn Island nearly to mid-channel in a South and S. by W. direction.

To proceed through Clements Strait, after passing about mid-channel betwixt Saddle Island and South Island, a course about N. by W. or N. N.W. will be proper, to pass nearer to Barn Island than to North Island, which track is requisite to avoid a Sunken Rock about 6 or 8 fathoms in diameter, having only $1\frac{1}{2}$ fathoms water upon it, and 8 to 10 fathoms all round. Sandy Island shut in behind Barn Island, and half of Table Island open with the north end of South Island, is on this sunken rock. The passage between it and North Island is equally safe as that between it and Barn Island, although not so wide, by keeping within a mile of North Island when passing the rock. Saddle Island bears from the Rock S. by W. $\frac{1}{4}$ W. $3\frac{1}{4}$ miles, North Island E. by N. $2\frac{1}{4}$ miles, Barn Island W. by S. $3\frac{1}{4}$ miles, and it bears North from the reef that lies about $1\frac{1}{4}$ miles eastward of Saddle Island. Having passed through this narrow part of the Strait, with North Island bearing East or E. by S. 3 or $3\frac{1}{2}$ miles, a direct course about North may be steered to pass on the east side of Gaspar Island, if bound into the China Sea, giving a berth to the General Hewitt Rock; and when clear of it steer to the N. Eastward, if bound to the coast of Borneo, taking care to give a

berth of at least 2 leagues to the N.W. coast of Billiton, as sunken rocks are interspersed throughout Treacherous Bay, which is situated between Long Island and the group of islands at the N.W. end of Billiton.

If coming from the Eastward, and bound to the northward through any of these straits, steer to make Shoe Island, which lies in lat. 3° 47½′ S., lon. 108° 2′ E., by chronometers, from Batavia; from thence, steer N. W.; which will lead you betwixt Shoal Water Island and a *long, low island** off the S.W. part of Billiton, where the water will deepen to 22 and 24 fathoms, sandy bottom. If you make the S. E. part of Billiton, coast along in 11 or 12 fathoms, taking care to avoid the Heroine Shoal and the Camden Shoal, and Shoal Water Island will be seen bearing about West, 4 leagues distant; the water will then deepen, and when Saddle Island is discerned to the N. N. W., if bound through Clements Strait, steer to pass mid-way between it and South Island, observing to give a berth to Embleton Shoal; but if Macclesfield Strait is to be chosen, steer a little more westerly, to pass betwixt the north end of the Vansittart Shoals, and Low and Sandy Islands, keeping within 2 miles of the west sides of these islands in passing; then steer near the west side of Pulo Leat, conforming to the directions in the beginning of this section, for proceeding through Macclesfield Strait. It is sometimes very difficult to get to the northward through any of these straits in the northerly monsoon, and even so late as March, calms and faint airs, with a constant southerly current, have been known to prevent ships from making any progress to the northward, and have obliged them to lie at anchor for several days together. At this season it is improper to attempt the passage to the northward through any of these straits; in a small ship, the passage close along the west coast of Borneo ought to be preferred. The Grenville, bound to China, reached Macclesfield Strait, February 28th, 1816, and met with constant southerly currents and N. N. W. winds, which obliged her to lie mostly at anchor, to prevent being drifted to the southward, and she did not pass Gaspar Island till March 13th; she saw the Great Natuna on the 30th, and then proceeded to Malacca for a supply of water.

Shoe Island.

SHIPS from CHINA, intending to pass through Gaspar Straits, may proceed by the westernmost branch, called Macclesfield Strait, if early in the season: from Pulo Domar, a course may be steered for Pulo Toty, in lat. 0° 58′ S., lon. 105° 42′ E., bearing from Pulo Domar, S. 6° E., distant 75 leagues, or 23 miles East from the latter by chronometer; if a southerly current is experienced after leaving Pulo Domar, it will *probably* set to the S. Eastward, as the distance is increased to the southward of the equator; for which allowance should be made in thick weather, when observations are not obtained, or when the wind draws to N. Westward. Pulo Docan bears nearly S. W. by W., about 3 leagues from Pulo Toty, and the depths are from 20 to 15 fathoms mud, in a safe channel between them; but pass to the East of Pulo Toty at 4 to 6 leagues' distance, or even farther, if the wind should incline from N. Eastward; but it is often to the north-westward or northward early in the season.

Macclesfield Strait, in the northerly monsoon.

Having passed Pulo Toty, from which Gaspar Island bears S.E., distant 40 leagues, steer an E. S. E. course, to get on the meridian of the latter island before you reach lat. 1° 50′ S., in order to pass to the east of the Magdalen Shoal, and all the dangers adjacent to the coast of Banca; then enter the straits on either side of, and near to, Gaspar Island: afterwards, haul to the S. Westward, to avoid the Alceste Rock, and pass on the west side of Pulo Leat, within 1½ or 2 miles, to avoid Discovery Rock.

* This island is not shewn in the chart.—Ed.

The foregoing directions are only applicable to ships which come from China very early in the season, when N. Westerly winds often prevail, and then Banca Strait is preferable;* but the best route to pursue in general, particularly in the latter part of the northerly monsoon, when S. E. and Easterly winds are often experienced between Banca and Billiton, is to steer for the North Natunas if not certain of the longitude, and pass 5 or 6 leagues to the westward of them, and the islands which lie off the western part of the Great Natuna, in order to give a berth to two shoals that lie from 2 to 3½ leagues S. S. Westerly from N. W. Island; taking care to keep a good look-out for the Low Pyramidal Rocks, in lat. 4° 8′ N., lon. 107° 27′ E., distant about 12 leagues to the westward of the Great Natuna. From hence, steer to pass to the westward of Haycock Island, to avoid the Diana Shoal, and proceed to the southward, leaving Victory and Barren Islands to the westward, and Camel Island, St. Julian, and St. Esprit Islands to the eastward, if the wind admit; otherwise, you may pass through the most convenient channel between these islands, which are all thought to be safe, with soundings from 20 to 35 fathoms. Having passed the St. Esprit Islands, steer to fall in with St. Barbe Island, and pass it on the west side about 3 leagues' distance; then steer to make Gaspar Island, taking care to get on its meridian, or to the eastward of it, before passing the Magdalen Shoal, which should not be passed in the night, as Gaspar Island is the only guide, in clear weather, to avoid that shoal: the soundings in this track are generally from 20 to 27 fathoms. When Gaspar Island is discerned bearing from South to S. S. W., steer to pass it on the east side, within 1 or 2 miles' distance, to avoid the Canning Rock, and to prevent being set over towards the Alceste Rock and the reefs at the north end of Pulo Leat, and pass Pulo Leat on the west side, within 1½ or 2 miles, and do not stand farther than 2½ miles at most from it in working, when abreast of the Discovery Shoal. A good look-out should be kept for the Belvidere Shoals, in running to the southward for Gaspar Island, as the rock at their northern extreme, or some of the dry patches, may be seen in clear weather, if Gaspar Island is kept bearing nearly South, which is proper, to prevent being carried to the eastward by the currents.

Low Pyramidal Rocks.

Having brought the west point of Pulo Leat to bear N. by E., steer out of the strait with this bearing, or in working, it may be kept between North and N. by E. ½ E. If working out between the Vansittart Shoals, and the shoal patches off the South end of Banca, Entrance Point must be kept between N. ½ W. and N.W. by N., or that point bearing N. ½ W. to N. by W., is a safe guide with a leading wind. With either of these marks, steer S. by W. until the low land that joins the hills on Banca is sunk under the horizon; and to avoid the Fairlie Rock, sink Shoal Water Island by the time it bears N. E. by E., observing that Entrance Point must not bear to the westward of N. by W. when the distance from it is increased to 8 leagues. When this point is distant 5½ or 6 leagues, bearing to the northward, a direct course may be steered to fall in with the Two Brothers, if N. Westerly winds prevail; but it will be prudent to make the North Watcher when the winds are S. Easterly.

Proceeding through Macclesfield Strait, when S. E. winds predominate, borrow near to Pulo Leat and the east side of the channel, to be enabled to pass clear out, without

* The Bombay and Charles Grant, in company, homeward-bound from China, in December, 1817, saw Pulo Aor in thick weather, intending then to pass through the Strait of Banca; but by steering a course to give a wide berth to the Dogger Banks in the night, they were carried far to the eastward of Banca, by a strong easterly current, having strong West and W. S. W. winds. They made Gaspar Island bearing S. by W., and anchored to prevent being driven farther to the eastward; but the Bombay parted from two anchors in the night, by the force of the short heavy sea. Neither of these ships was able to effect a passage through the Straits of

falling to leeward upon the 2½ fathoms bank, or the shoal banks and overfalls projecting from the south end of Banca. The soundings in the strait are generally 17 and 18 fathoms in mid-channel, increasing abreast the west point of Pulo Leat to 24 or 28 fathoms; from hence, decreasing to 12 and 11 fathoms, in passing out of the strait to the southward of Entrance Point. The bottom in many places is mud, but often it consists of coarse sand, shells, and stones, and in some places rocky, particularly near the shoals on the Banca side. About 1½ miles westward from the small island Pulo Chellaka, adjoining the west point of Pulo Leat, the bottom is also rocky and improper for anchorage, nor should it be approached to less distance, on account of two rocks, with only one fathom water over them, which are three-quarters of a mile to the westward of the small island.

RETURNING FROM CHINA, late in the season, S. S. Westerly winds in the southern part of the China Sea are likely to set a ship over to the eastward amongst the islands adjacent to the coast of Borneo. Should this happen so late as May or June, it would be tedious getting to the southward; in such case, steer for the N. W. end of Billiton, and pass through Clements Strait. The Island of Billiton is high uneven land, and its coasts, which have not been well explored, are lined with many dangers, and islands. The outermost island of the group, adjoining the N.W. end of Billiton, is in lat. 2° 35′ S., and bears nearly S.W. ½ S. from the Island Souroutou, distant about 23 leagues.

Passage from the northward through Clements Strait late in the season.

Having approached the N. W. end of Billiton, which may be seen about 8 leagues, give a berth of 4 or 5 miles to the group of islands contiguous to it, and a direct course must be steered to the S.W., to pass the N.W. end of Long Island about the same distance; for Treacherous Bay, on the west side of Billiton, is very dangerous, having many sunken rocks at 4 and 5 miles' distance from the shore; the coast is barren and destitute of fresh water. The fleet, under Captain Clements, went into this bay in search of fresh water, in July, 1781; and the Mansfield and Pigot both struck, and lay some time upon the sunken rocks, N.W. Island then bearing N. 20° E. 6 or 7 miles, outer extreme of Long Island S. 50° W., Gaspar Island N. 67° W., off Billiton 4 or 5 miles.

Treacherous Bay.

After passing the N.W. end of Long Island, to avoid the General Hewitt Rock, a S. S. Westerly course should be followed towards North Island, which should be passed to the westward about a mile distant, to avoid the Sunken Rock 2¼ miles W. by S., from North Island, then keep nearly in mid-channel, betwixt South and Saddle Islands. When through the channel between these islands, continue a southerly course, taking care not to bring Saddle Island to the eastward of N. by E., until 10 or 11 miles to the southward of it, in order to avoid the S. E. angle of Vansittart Shoals; then steer westerly to give a berth to Shoal Water Island, and the shoals to the southward of it, and particularly to Fairlie Rock, by leaving all these dangers to the S. Eastward; when clear of them, steer a direct course to fall in with the North Watcher.

Gaspar, but were driven to the eastward of Billiton by the strong easterly current and westerly winds, and both proceeded to the southward through the Carimata Passage. From hence, the Charles Grant worked to the westward, and proceeded through the Strait of Sunda; but the Bombay went through the Strait of Allass, and they arrived at St. Helena on the same day.

BANCA STRAIT TO PULO AOR, AND RHIO STRAIT.

WHEN clear of Frederic Hendric Rocks at the north end of Banca Strait, if bound into the China Sea, steer N. by E. to pass between the Seven Islands and Pulo Taya, in regular soundings, increasing from 7 to 12 or 14 fathoms as the islands are approached.

From Banca Strait to the northward.

In thick weather, or in the night, the lead may be useful as a guide, to discover if there is any oblique current, for the depth will generally decrease over a bottom of ooze mixed with sand, towards the Sumatra Coast, and increase near the Seven Islands over an oozy or muddy bottom; but these islands must be approached with caution in the night, on account of the rock near the westernmost of them, for the soundings do not always point out its proximity.

Seven Islands.

PULO TOOJOO, *i. e.* SEVEN ISLANDS, lie in two groups, extending 7 or 8 miles in latitude, the southernmost group consisting of three islands. By Captain Ross's observations, the N. Westernmost of these islands are in lat. 1° 8′ S., lon. 105° 24′ E., or about 10 miles East of the meridian of Monopin Hill.* Some of them are seen from the northern extremity of Banca, being generally high, and may be discerned 8 or 9 leagues: they are all covered with trees, except the westernmost, which is a Barren Rocky Islet, with a small rock above water to the W. N.W. of it, distant 1 or 2 miles; this renders a cautious approach necessary in the night, or in thick weather. Pulo Docan bears about E. N. E. from the Seven Islands 4 or 5 leagues, and the channel between it and them has 15 and 16 fathoms regular soundings. But a rock has been discovered about $1\frac{1}{2}$ miles S. E. from Pulo Docan, upon which the ship Mary, then on her passage from Mintow to Singapore,† struck, in January, 1823, although drawing only 10 feet water.

Pulo Docan.

Pulo Toty.

PULO TOTY, mentioned in the last section, lies about 3 leagues N. E. by E. from Pulo Docan.

Pulo Taya.

PULO TAYA, or SAIA, in lat. 0° 45′ S., lon. 104° 58′ E., distant 34 miles N.W. $\frac{1}{2}$ W. from the N. Westernmost of the Seven Islands, bears from Pulo Docan W. by N. $\frac{1}{4}$ N.; it is high, and may be seen 11 or 12 leagues in clear weather, and near it, on the N. East side, lie two rocky islets.

Ilchester Shoal.

ILCHESTER SHOAL, to the northward of Pulo Taya, is much in the way of ships steering from that island towards the east point of Lingin. The Ilchester, returning from China in 1754, had thick weather after passing Pulo Aor, and in hauling

* Captain Ross, December 22nd, 1812, by chronometers and cross bearings, made the N. Westernmost of the Seven Islands $11\frac{1}{4}$ miles East of Monopin Hill; whereas, Captain Lestock Wilson's observations, in 1789, placed the westernmost rock nearly on the meridian of that hill: Mr. Fulton, in 1821, made the N. W. Island on the meridian of Monopin Hill, agreeing with Captain Wilson.

† Communicated by Captain Norquoy, from that ship's journal.

to the W. S.W., struck on a shoal, December 12th, at 4 P.M., on which were $2\frac{3}{4}$ fathoms, sand and mud; she got off, by throwing the sails a-back, after being about 10 minutes aground. When on the shoal, the weather was thick, but two hummocks bearing N. N. Westerly, thought to be near the east point of Lingin, or the islands contiguous to it, was the only land visible; and by computation from the succeeding noon observation, the shoal appeared to lie in lat. 0° 28′ S. After anchoring near it on the west side, in 18 fathoms; and weighing on the following morning, she steered S. S.W. and S.W. by S. 6 or 7 leagues, made Pulo Taya bearing S. E. by S. about 3 leagues, and passed to the westward of it; having experienced about 20 miles of westerly current from leaving Pulo Aor.

The brig Tweed, in December, 1799, shoaled suddenly in working into Lingin Bay, from 18 to 3 fathoms, hard ground, on the western part of the Ilchester Shoal, with Pulo Taya bearing S. $\frac{3}{4}$ W., distant $4\frac{1}{2}$ leagues; tacked immediately, and steered S. S. E., deepening to 8 fathoms; then steered W. by S., and had overfalls from 20 to 10, 9, and 8 fathoms.

The Forth, in 1803, grounded on the west part of the Ilchester Shoal, with the small island off the east point of Lingin bearing N. by E. $\frac{1}{2}$ E., distant about 12 miles.

This danger was examined by Captain Ross, who found it to be in lat. 0° $26\frac{1}{2}$′ S., extending N. by E. and S. by W. about $2\frac{1}{4}$ miles, and $1\frac{1}{2}$ miles in breadth, having one fathom water on its shoalest parts, with Pulo Taya bearing S. $\frac{1}{2}$ W., the islet off the east point of Lingin N. by E., East point of Lingin N. $\frac{1}{2}$ E., distant 8 or 9 miles. The depth of water decreases nearly all around, from 18, 16, or 15 fathoms, suddenly to 5 and 3 fathoms on the edge of the shoal.

To avoid this shoal, the small islet off the east point of Lingin must not be brought to the eastward of North, and Pulo Taya should be kept to the westward of S. by W. in passing the danger: in coming from the northward, after passing Lingin Point, it seems advisable not to haul to the westward to make Pulo Taya until near its parallel, or after having passed lat. 0° 32′ S.

LINGIN, or LINGA, is a large island, extending E. S. E. and W. N.W. about 16 leagues, the equator passing through it. There is a mountain on its southern part, with two remarkable peaks (sometimes called the Asses' Ears) near each other, rising like spires from its summit: the S. E. extremity of the island is also a hill, and being joined to the high land in the interior by a neck of low land, is often mistaken for a detached island; the S. E. point, called Tanjong Eang, is in lat. 0° 18′ S., lon. 105° 4′ E., having islets and rocks around. The N. E. side of Lingin has several islands near it, and those called the Dominos, in lat. 0° 9′ or 0° 10′ S., are moderately elevated; the outermost, or East Domino, bears about North 3 leagues from Lingin East Point, and nearly the same distance from the opposite shore, having rocks projecting from it to the southward, and close to the eastward of it a depth of 14 fathoms: about 3 leagues off the N. E. part of Lingin, from 10 to 15 fathoms are the common depths; and close to the rocks at the East Point there are irregular soundings from 14 to 22 fathoms. Lingin. Isles contiguous.

Lingin Bay is of semicircular form, exposed to southerly and easterly winds, and large ships are obliged to lie far out, on account of shoal water extending from the mouth of the river, around Pulo Kelumbo and its adjoining islets. Lingin Bay.

Coming from N. Eastward, and bound into Lingin Road, a ship should round the east point of the island at a moderate distance, then steer westward for the anchorage, observing not to borrow too near the south coast, as the Stirling Castle was wrecked To sail into Lingin Road.

on a shoal that projects from the Third Point, counting westward from the east point of the island, and which has 16 feet water on it, and 12 or 14 fathoms close to. If coming from Banca Strait, she should pass to the westward of Pulo Taya, and steer for the high land to the eastward of Lingin Peak, giving a moderate berth to Pulo Sinkep, which forms the west side of the channel; in working, it may be approached within 3 miles in 6 or 5 fathoms: the soundings are not always regular, but they will decrease gradually as the road is approached. The anchorage is 5 or 6 miles off shore, in 5 or 4½ fathoms, mud, with Pulo Taya bearing about S. S. E., the east point of Lingin East southerly, about 2½ or 3 miles to the S. Eastward of Pulo Kelumbo, a small island that lies about 4 miles S. S. Eastward from the mouth of the river, on the banks of which stands the town of Lingin. The country traders touch here at times with opium, for which, in return, they receive tin, pepper, rattans, and some gold; but the inhabitants being treacherous, and addicted to piracy, caution is necessary, and a ship intending to touch here must be well armed, and constantly prepared to repel any assault that may be made by their armed proas.

Ships may steer for the bay, by passing to the eastward of Pulo Taya, the channel being 4 or 5 leagues wide between it and the Ilchester Shoal; in such case, borrow near Pulo Taya, then steer N.W. by W. and N.W., afterwards more northerly for the road.

Pulo Sinkep, and other islands.

PULO SINKEP, PULO SLIAR, and PULO POONOOBOO, form a group of three islands, with some adjoining islets, stretching from the S.W. part of Lingin 6 or 7 leagues to the southward; the channels which separate these islands being narrow, they appear as one large island. Pulo Sinkep, the south-easternmost of the group, is high, and is the largest island of the three.

Dassee Strait.

DASSEE STRAIT, called also Labooan Dadong, formed between this group and the S.W. end of Lingin, is a short route from Lingin Road to the Straits of Dryon, and has soundings generally from 7 to 14 fathoms; it may be navigated, with care, in ships of moderate size. If bound from Lingin Road to the westward, through the Strait of Dassee, steer out to the southward and S. Westward, till near the N. E. part of Pulo Sinkep, to give a berth to the islets off Tanjong Datoo, the west point of Lingin Bay, and the extensive shoal which stretches from thence to the road. Having passed about mid-channel between the islets off Tanjong Datoo and those near the southern shore, steer for the S.W. Point of Lingin, and the depths will be 12 and 14 fathoms near the islets and rocks on the south side the strait, and 9 or 10 fathoms towards the Lingin shore; the bottom hard in the eastern part of the strait, and soft to the westward. Having passed the S.W. point of Lingin, steer about West, in soundings of 11 to 9 and 8 fathoms, soft ground, and pass to the northward of Wright Island, about 2 miles distant, in 7, 8, or 9 fathoms; then steer to the N.W. for the Straits of Dryon. Wright Island is in lat. 0° 15′ S., and 2 miles to the North of Pulo Selinsing or Green Island. These are the outermost islands on the south side the channel, and there is a passage with 9 to 11 fathoms between them, and another about 2 miles wide, with 10 to 19 fathoms, formed between Green Island and the islands contiguous to the N.W. extremity of Pulo Sliar, which are fronted by a reef on the north side.

Geldria Shoal.

GELDRIA SHOAL, or DOGGER BANK, was so named by Jurian Verburg, who was sent in the Bark Ryder from Batavia, to examine Banca Strait, in 1761: he

had only 1 and $1\frac{1}{2}$ fathoms water on it, coarse sand with shells, and 7 fathoms at its extremity.

The Crown Prince, Danish Indiaman, struck on it in 1748, and had seen Pulo Panjang about half an hour before, bearing N.W. by N.; the soundings near it decreased from 25 to 24, 23, and 19 fathoms, coarse sand, close to the edge of the bank, on which ripplings were seen when she struck. Captain Dempster, returning from China in the Ganges, struck on it, at 9 P.M., May 27th, 1784; the helm was immediately put down, and the ship came about in $3\frac{1}{2}$ fathoms, rocks; stood off N. E. by E., and anchored in 20 fathoms, sand, the water having deepened as fast as the lead could be hove. At day-light, Pulo Panjang in sight from the deck bearing N.W. by N., two small islands W. by S., with several small hummocks between it and them, appearing like low islands; the rippling on the shoal then S.W. about half a mile. The danger appeared to be about a quarter of a mile broad, stretching E.N.E. and W.S.W. about a mile, and having on it great overfalls from 2 to 6 fathoms; the boat, on one part, found only 6 feet, coral rock. At a small distance to the southward, the boat had 17 and 18 fathoms, to the northward 20 and 22 fathoms, and 16 fathoms close to the shoal.

Captain Ross, in 1819, examined this shoal, and made it in lat. 0° 48′ N., lon. 104° 59′ E., and its extent in a N. E. and S.W. direction is about $1\frac{3}{4}$ miles, having on it from $1\frac{1}{2}$ to 4 fathoms water; 19 or 20 fathoms nearly close to the eastern part, from 8 to 11 and 12 fathoms irregular depths near the S.W. and western sides, deepening to 15 fathoms close to the BOAT ROCK, which is formed of three low rocks, visible about 4 miles from a ship's deck. From Geldria Shoal the Boat Rock bears N. N.W. $\frac{1}{2}$ W. about $2\frac{1}{2}$ miles, Ragged Island N. N.W. $8\frac{1}{2}$ miles, Pulo Panjang N.W. by N. 5 leagues, Saddle Island West 8 miles, and South Island, which has several small islets near it, W. S.W. Saddle Island is in lat. 0° 48′ N., and appears a double hummock, bearing about West, when seen from Geldria Shoal. Ragged Island, in lat. 0° $56\frac{1}{2}$′ N., lon. 104° $56\frac{1}{2}$′ E., is small, but high, and may be seen 7 or 8 leagues in clear weather; it lies about 6 miles to the S. E. of Pulo Panjang, and is the easternmost of all the islands situated to the East and S. Eastward of the large Island Bintang. *Ragged Island.*

Passage from Banca Strait to Pulo Aor.

FROM BANCA STRAIT, if bound into the China Sea, after having steered about N. by E., and having passed between the Seven Islands and Pulo Taya, when 4 or 5 leagues to the eastward of the latter, steer N. N. E., keeping the east point of Lingin, when seen, to the westward of North, to give a berth to the Ilchester Shoal, and to cross the equator in 20 or 21 fathoms. From thence steer about N. N. E., until past Geldria Shoal, observing, in the night, not to come under 23 or 24 fathoms between lat. 0° 40′ N. and 0° 50′ N., to avoid that danger; but in the day, when Ragged Island is seen, keep it to the westward of N.W. by N., which will lead clear to the eastward of the shoal. Having got into the latitude last mentioned, or in 24 or 25 fathoms water, steer N. N.W. until in lat. 1° 0′ N.; being then abreast of Ragged Island and Pulo Panjang, a N. N.W. course will lead fair to the eastward of Pulo Aor, if there be no lateral current, in soundings from 29 to 34 fathoms, fine grey sand, or sometimes sand and mud.

Rhio Strait.

TO ENTER RHIO STRAIT, when coming from the S. E. or Southward, pass along the east coast of Lingin at any convenient distance, in soundings from 14 to 18 fathoms, giving a berth of 3 or 4 miles to the islands off its N. E. part. Having passed

these, steer to the N.W. for Pulo Rodong, which may be approached within 1 or 2 miles at the N. E. and north parts, in soundings of 10 to 12 fathoms: this island is of considerable size, with a peaked hill situated in lat. 0° 25′ N., and bears North from the northern part of Lingin, distant 3 or 4 leagues. From abreast Pulo Rodong, steer N. Westerly towards the entrance of the strait, keeping Table Hill (which is flat at the summit, and stands on the south part of Pulo Gallatt) a little on the larboard bow. In entering the strait, borrow towards the islets near Pulo Gallatt, as the Topies, or Five Islands, forming the east side of the entrance, have shoals extending 3 or 4 miles to the S. S. W., and 1 or 2 miles from their western sides; the soundings will decrease to 8 and 10 fathoms inside, and in some parts to 5½ or 6 fathoms. When clear of the Topies, which lie to the W. N.W. of Alligator Island (there being a passage, not so wide as the western channel, between them), steer North, and then N. by E. for Rhio Town, and pass between the island off the S.W. point of Bintang, and Pulo Sootoo, the other island to the westward; for shoals extend from the latter in a N. Westerly direction, nearly to the west side of the strait, and a shoal mud bank projects from it to the S. S. Westward. The S.W. point of Bintang Island, called Tanjong Bintang, is 5 or 6 miles to the southward of Rhio, and after passing it, continue to steer northward until abreast of Rhio Point, if to stop there; the common anchorage is in 5 or 6 fathoms to the northward of the point, under Pulo Beringa, in lat. 0° 57′ N.

Port of Rhio. RHIO was formerly a port of great trade; but having suffered severely at various times, by the requisitions of the Dutch, and piratical invasion, it affords few articles of merchandize at present, and is not frequented, except by small country traders, for a little pepper, or tin.

From Rhio to Singapore Strait. DEPARTING FROM RHIO, and bound to the northward, avoid the shoal to the westward of Pulo Beringa, by borrowing on the east side the strait, and close to Pulo Tercoli, the next island, as the rocky banks to the southward of the latter are not always discerned. From the north part of the largest bank, dry at low water, Captain Robert Scott had Bintang Hill bearing N.N.E. ½ E., the east part of Pulo Tercoli, low and sandy, N. N.W., distant 3½ miles, west part of ditto N. N.W. ¾ W., First Hill to the southward of the strait W. ½ S.

From the N. W. part of the bank, the east point of Pulo Tercoli bore N. by W., west point of ditto N. N. W., distant from this island not more than 3 miles, the first hill to the southward of the strait W. ¼ N., Little Luban N. W. by W. ½ W., Bintang Hill N. N. E. ½ E. These banks are very dangerous, particularly in coming from the northward with a flood tide, if you do not keep near to Pulo Tercoli, as the channel is greatly contracted by them, and the following newly discovered shoal.

Minerva Shoal. THE MINERVA SHOAL, discovered by Captain Bell, in the Minerva, on the passage from Port Jackson and Batavia to Singapore, May 27th, 1825, when at 10 A.M., with Bintang Hill N. E. ½ N., Pulo Luban W. by N., and Pulo Tercoli N.W. ½ N., distant 1½ miles, shoaled from 5 to 3 fathoms at a cast of the lead, and grounded against the edge of a shoal, composed of hard sand, extending about 200 feet in a W. N. W. direction, and about 60 feet broad. The least water found on it was 2¼ fathoms, hard sand, and all around 5 fathoms, soft ground.

Having passed Pulo Tercoli, steering westward, the depth will increase as Pulo

Luban is approached; and after rounding the west end of this island and Little Luban, at a moderate distance, the course is about North, to pass nearly in mid-channel towards the north entrance of the strait, till the Pan Shoal is approached, in soundings from 10 to 20 fathoms. There are several shoals contiguous to the shores on each side, which render it necessary for those unacquainted to keep a boat sounding a-head, when sailing through this strait.

PAN SHOAL, situated at the north entrance of the strait, nearly in mid-channel, is the greatest danger, being extensive and rocky, sometimes visible at low water. There is a safe passage on either side, but that on the west side, between it and Pulo Battam, is not so wide as the other to the eastward between it and Bintang; although, with proper caution, the western passage might be adopted if necessary. When the north extreme of Bintang bore E. by N., the north extreme of Pulo Battam W.N.W., Barbucit Hill N. ½ E., Pan Shoal was in one with Bintang Hill bearing E. by S. ¼ S., distant about half a mile. Its eastern extremity bears S. ½ W. from Barbucit Hill, and its western extremity S. by E. ½ E. from Johore Hill, and its centre bears E. S. E. from the N. E. point of Pulo Battam. To avoid this shoal, it is best to proceed by the eastern channel, keeping within 3 or 4 miles of the Bintang shore, in soundings of 13 or 14 fathoms, to 18 and 20 fathoms towards the shoal; and when the north extreme of Pulo Battam is brought to bear W. by S., a vessel is clear of it, and is entered into the Strait of Singapore. Barbucit Hill, kept North or N. ¼ W., leads clear of it to the eastward; and Johore Hill, bearing about N. by W., leads clear of it to the westward. Pan Shoal.

The Minerva, in May, 1825, went through the western passage, and it was thought safe; but neither Pan Shoal nor the Battam shore ought to be approached too close, as the latter, in some places, is fronted by patches of rocks under water, projecting about 1 and 1½ miles, with an islet and some rocks above water near the N. E. point of Battam. The Dolphin, Captain East, April 18th, 1821, steering into Rhio Strait by the western passage, saw two rocks about 2 feet under water nearly close to the vessel: she hauled out instantly, and had 3¼ fathoms rocks, the rudder just clearing them, with Barbucit Hill N. by E., a large dry rock S. S. W., Battam N. E. point and islet in one W. by N. ½ N., Pulo Luban S. S. E., north part of Bintang E. ¾ N., Bintang Hill E. by S. ½ S., Pan Shoal S. E. by E., off the Battam shore about 1½ or 2 miles. These rocks appeared to be detached from the shore, and the Dolphin in hauling off from them deepened into 7 fathoms, then to 9 fathoms over to Pan Shoal. The ship George Crutenden afterwards grounded on rocks a little farther to the southward, Battam Point bearing N.W. ½ N., north point of Bintang E. by N. ½ N., Barbucit Hill N. by E. ¼ E., Pan Shoal E. ½ N., Pulo Luban S. S. E. ¼ E., off the Battam shore 1½ or 2 miles: had only 2 feet water on these rocks at low tide, and 6 fathoms within them; the Crutenden lay 13 hours on the rocks before she was hove clear of them.

Lieutenant Harding, in the ship Indian, May 14th, 1830, thus describes the shoal. "Weighed from under Luban Island, and passed through the Western Channel between Pan Shoal and Battam Island, towards the Strait of Singapore, steering about N. N. W. When nearly in mid-channel, about 1½ miles from the Battam shore and 1¼ miles from the shoal, had soundings of 10 and 9½ fathoms, least water, as marked in Horsburgh's chart, the shoal apparently about 3 feet above water; but afterwards, when a boat was sent to examine it, the tide had flowed over it to the depth of about 4 feet. When upon the western edge, in 7 fathoms water, the angle Lieut. Harding's description of the shoal.

between Barbucit Hill and Battam Point, was 68° 18′: when upon the shoal, the angle between the same objects was 70° 35′, the bearing, as by chart, Barbucit Hill N. $\frac{1}{4}$ E., Battam Point W. N. W. Between Barbucit Hill and Bintang Hill, the angle was 101° 43′, and between Barbucit Hill and Johore Hill 44° 30′. The shoal appeared to be about a third of a mile in length, and parallel to the Strait of Rhio; the broadest part fronting the Strait of Singapore."

To return into the Strait of Rhio.

To enter Rhio Strait from the northward, and to pass eastward of Pan Shoal, bring Johore Hill to bear N. N. W., or Barbucit Hill N. $\frac{1}{4}$ W., then steer South, taking care not to bring the latter to the eastward of North; for in such case, you would be very near Pan Shoal. Having passed it, and fairly entered the strait, the course is about South to round Little Luban about 2 or 3 cables' lengths distance; then E. by S. and E. S. E., and pass at a small distance on the west side of Pulo Tercoli and Pulo Beringa, giving a berth to the Minerva Shoal.

FROM BANCA STRAIT, THROUGH DURIAN STRAIT AND PHILLIPS CHANNEL.

ISLANDS, COASTS, AND DANGERS.

Strait of Durian.

THE STRAIT OF DURIAN or DRYON, with the extended channel to the southward, is above 40 leagues in length from Pulo Varela to the Carimons; and is bounded on the west side by the coast of Sumatra, False Durian, Sabon, and the contiguous islands; on the east side, by the islands off the south and west sides of Lingin, Great and Little Durian, and the adjacent islands.

Pulo Varela.

PULO VARELA, in lat. 0° 50′ S., lon. 104° 28′ E., bearing W. $\frac{3}{4}$ S. from Pulo Taya, about 11 leagues, is of middling height, having a hill on its western part, which may be seen 7 or 8 leagues. There is anchorage at the south-west side, and water may be procured: but this ought only to be done in case of necessity, as the lurking piratical proas have been known to assault and massacre the crews of boats sent on shore to procure water at this island.* Near Pulo Varela, on the south and eastern sides, are some islets and rocks, the largest of which is Anak Barellah, to the N. E., about a mile distant, having 7, 8, and 9 fathoms water between it and the principal island; and a mile North from Anak Barellah lies a rock, with 17 fathoms close to it, having a channel 2 miles wide, with 10 to 16 fathoms between it and others, named Mid-Channel Rocks, 5 miles N. E. by N. from Pulo Varela, or nearly mid-way from the latter, towards the islets which front the south end of Pulo Sinkep.

Islets and rocks.

Channels.

The channels to the northward, between Pulo Varela and the small islands contiguous to the south end of Pulo Sinkep, seem to be safe, with soundings from 10 to 16 fathoms, by giving a berth to the rocks and the islets which bound the north-west part of the passage; but the channel to the southward of Pulo Varela, being wider, is

* The ship Hercules was attacked by seventeen large proas near this place, and narrowly escaped being taken by them.

mostly frequented by ships. TANJONG BON, which bounds it on the South, is in lat. 0° 59′ S., bearing S. by W. ½ W. 10 miles from Pulo Varela, and, like other parts of the east coast of Sumatra, is low land.

PULO SERAH, or REEF ISLAND, in lat. 0° 38′ S., distant about 5 leagues north-westward from Pulo Varela, is a flat, low island, sometimes mistaken for the latter, in coming from the northward. Some rocky islets, called Anak Serah, lie about 2½ miles N. by E. from Reef Island, with a safe passage between them, and also between Anak Serah and the coast of Pulo Sinkep. Pulo Serah, or Reef Island.

THE SPEKE ROCK, on which a ship of this name struck, bears S. E. from the South Calantiga, distant 6 miles, and W. ¾ N. from Reef Island, having 10 fathoms water close to it; and a small black rock is sometimes visible, about the height of a boat, over the submerged part. Betwixt the Speke Rock and Reef Island, and also between the former and the Calantigas, there is a safe passage on the east side these islands, by rounding the northernmost at any convenient distance, or about 1½ miles off, in 6 or 7 fathoms. The soundings in this passage are generally from 7 to 9 fathoms, muddy bottom, sometimes sand; but the western channel is preferable. Speke Rock.

THE CALANTIGA, or ALLANG TEEGA ISLES, in lat. 0° 29′ to 0° 31½′ S., lon. 104° 5′ E., bearing nearly N.W. by W. from Pulo Varela, distant 10 leagues, extend from their south extreme about 3 miles nearly N. by E. ½ E., having some islets contiguous to them. The three principal islands are high, and may be seen 8 leagues, and the others 4 or 5 leagues from the deck. There are 7 fathoms close to these islands, and half a mile off the north end of the southernmost lie two rocks, each about the size of a long-boat: when bearing N. N. E. and N. by E., the islands are in one with each other, and they open when the southernmost bears N. by W. ½ W. Having approached these islands, they may be passed on the west side at 1 or 2 miles' distance; the depths will be mostly from 6½ to 8 or 9 fathoms, mud, in the fair channel: in working, the coast may be approached to 6 fathoms, and from this depth to 8 or 9 fathoms towards the islands is a fair track, although the soundings are not always regular, 7 fathoms being the general depth directly West from the islands until near the main land. Calantiga. Directions.

TANJONG BASSOO, or BACCOWN, in lat. 0° 26′ S., lon. 103° 48′ E., distant 19 miles N. W. by W. from the Calantigas, projects far out to the eastward from the other low land, by which the Bay of Indigiri is formed on the North, between it and Tanjong Barroo; the River Indigiri runs through several channels into this bay, and is fronted by an extensive shoal, which fills the southern part of the bay. The outer edge of this shoal extends from Tanjong Bassoo in a N. N. E. and N. by E. direction full 3 leagues, being very steep to, having 10 or 11 fathoms within half a mile of it in some places, then quickly 5 or 4 fathoms, to 1½ or 1 fathom upon it; which requires great attention to the lead, when approaching this part of the coast in the night. Tanjong Bassoo.

TANJONG BARROO, or DATTOO, in lat. 0° 1′ N., bearing from Tanjong Bassoo North a little easterly, distant 7 leagues, forms the northern boundary of Indigiri Bay, and may be approached within 1½ miles occasionally in working, or to 8 or 9 fathoms. From this low headland the coast stretches N. by W. and N. N. W. towards the Strait of Durian, fronted by a shoal bank, which may be approached

by the soundings, as from its edge they gradually decrease on it to 6, 5, 4, and 3 fathoms.

Three Brothers.

THE THREE BROTHERS extend nearly North and South about 6 miles: the southernmost being the largest and highest, about a mile in length, may be seen at 6 leagues' distance, and lies in lat. 0° 32′ N., lon. 103° 48′ E.: there is a white cliff or rock on the N. E. side, which makes this island remarkable. The Middle Brother is not so high as the southern one, which from its north point lies North about 1½ miles. The North Brother is smaller and lower than the others, and is sometimes called the Round Brother: it lies to the N. N. Westward of the middle one about 3 miles; and betwixt them there is a safe passage, with 11 to 17 fathoms water, now frequently used. Ships passing through it should haul close round the Middle Brother, to give a berth to the rock appearing above water, at the extremity of a reef of straggling rocks that projects from the North Brother about a mile to the south-east, and is partly dry at low water; but there are gaps of deep water between the rocks in some parts.

Between the South and Middle Brother there is also a safe passage, about two-thirds of a mile wide, with soundings from 9 to 12 or 13 fathoms; both these islands may be approached pretty close all round, except at the south point of the South Brother rocks project considerably.

EASTERN BANK, bounding the channel to the eastward of the Brothers, is composed of hard sand, having irregular depths from 6 to 4, 3, 2, and 1½ fathoms, with 10 and 12 fathoms close to its western edge. From the North Brother, its southern extremity bears East southerly about 5 miles, and its western edge extends from thence about N. by W. ½ W. three miles, rounding afterwards to the North and North Eastward.

Great and Little Durian.

GREAT AND LITTLE DURIAN,* or DRYON, lying about N. by W. and N. N.W. from the Brothers, and separated from each other by a narrow creek, are two high islands, bounding the straits on the north-east side. False Durian is to the westward of the North Brother, and with the contiguous islets bounds the straits on the S.W. side; it has a peak on it, but the conical peak of Great Durian, being higher than any of the other land, is first discerned in coming from the southward.

As the islands hereabout have a similar appearance, strangers ought to be careful, in coming from the southward, not to mistake one for the other, for some ships have not been able to discern the proper passage.†

To sail towards the Brothers.

When the Peak of Great Durian is seen bearing about N. ½ W., or N. by W., a ship will be in the fair track, and should steer for the South Brother, which in one with Great Durian Peak bears N. by W. The channel betwixt the eastern bank and the North Brother is about 4 miles wide, having various depths from 15 and 16 to 10 or 11 fathoms. The channel to the westward of the Three Brothers, betwixt them and False Durian, has from 8 to 14 fathoms water, and is equally safe as that to the eastward of them, although not so wide.

* Great Durian is called Pulo Sanglar by the Malays.

† H.M.S. Buffalo, in October, 1803, coming from the southward, and not being able to discover the proper passage, got to the eastward of Great Durian, then stood to the northward amongst the islands, betwixt Durian and Pulo Mogo to the westward, and Pulo Soogee to the eastward, through Salat Mogo, a safe passage with regular soundings, 6 fathoms, mud, the least water; although no navigable passage amongst these islands to the eastward of Durian was formerly thought to exist.

SABON is the principal island on the west side the channel, and lies nearest to Great Carimon, but the whole of the western shore from False Durian to the Carimons, formed of numerous low islands, is generally called the Sabon shore; for they are separated from Sabon, and from each other, only by very narrow channels, and therefore appear as one continued island; of these, Pulo Booroo, fronting the Sabon shore, is the largest, having Pulo Pandan, two small islands, about a mile to the northward of it, and near to the N. E. end of Sabon. Sabon and the adjacent islands.

Rocks, partly dry at half-tide, project from the Sabon shore about half a mile, with Sabon Hill bearing West to W. ½ N.; these are easily avoided by edging out a little. Sabon hill cannot easily be mistaken, being the only hill on the west side the channel to the southward of Great Carimon, which island has on it *two* high peaked hills, and the Little Carimon *one*. The latter is the northernmost of the islands on the west side the channel, and together with the Great Carimon are much higher land than any of the islands to the southward. All the islands adjacent to the Strait of Durian are covered with trees, and the whole of the N. E. part of Sumatra is woody and low land.

The bank of sand off the south end of Great Carimon extends N.W. by N. about 5 miles, with 4 and 4½ fathoms on it in most places, and 2¾ on the western part; betwixt which and the shore there are 5½, 6, and 7 fathoms. About 2 miles S. E. from the S.E. point of Little Carimon there are 3¾ fathoms on another bank, which stretches in a S.E. direction, nearly joining to the former bank, and the general depths on it are from 4 to 5 fathoms. Sand Banks.

THE STRAITS of SABON and MANDOL are very intricate, and are never attempted by European navigators. The former is contiguous to the west sides of False Durian, Sabon, and the Great Carimon; that of Mandol is along the Sumatra coast, having part of this coast, the Islands Mandol, and Pantjoor, and the entrance of Brewers Strait on the west side, and several islets and reefs on the east side, hich separate it from Sabon Strait. As both these straits are bordered by reefs, with shoal water in some places, they *appear* to be only navigable by proas or small vessels. Straits of Sabon and Mandol.

BREWERS STRAIT, or SALAT PANJANG, is a narrow arm of the sea, which extends from the above described straits to the westward, and joining Siak River, falls into Malacca Strait nearly opposite the town of that name. The coast of Sumatra, to the westward of the Carimons, is thus formed of several islands, which are considered by navigators as the main land. Although Brewers Strait is narrow, there is good depth of water in it, but it is only navigated by the country proas. Brewers Strait.

Pulo Booroo is a low island, about 4½ miles in length, crowned with high trees, and having a few inhabitants, who collect great quantities of mangostans, durians, and other fruits, which flourish here in a wild and luxuriant state. Fresh water may also be got with convenience. From Pulo Pandan, a bank extends along the eastern shore of Pulo Booroo to the distance of about three-quarters of a mile, with several rocky reefs on it, dry at low tide; here the soundings are very irregular. Pulo Booroo. Bank.

MIDDLEBURG SHOAL, lying nearly mid-way between Red Island and the bank of Sabon Island, is a reef of coral rocks, 300 yards in extent, of circular form, partly dry, about one foot above the sea at low water spring tides, its sides being almost perpendicular, with 7 and 9 fathoms close to the rocks, and from 17 to 20 fathoms about 200 yards off. When on the centre of the shoal, Passage Islands were Middleburg Shoal.

in one, their east ends bearing S. 33° 15′ E. by theodolite; a rocky islet, with a tree on it, off the north end of Red Island, nearly on with the north brow of the North Twin; the Twins open to the northward of Red Island, the south end of Red Island N. 75° 57′ E.; Sabon Hill N. 74° 39′ W.; Clay Island W. 1° 42′ N.; Peak of Great Durian S. 47° 42′ E., and the Peak of False Durian S. 27° 14′ E.

Passage East of it. The passage between Middleburg Shoal and the patch of rocks off the west end of Red Island is $2\frac{1}{4}$ miles broad, with irregular soundings from 16 to 22 fathoms: with a fair wind, the best leading mark is, to keep the east end of North Passage Island on with the Peak of False Durian, and stand no nearer Middleburg Shoal than to bring the east end of North Passage Island on with the west end of South Passage Island, nor nearer to Red Island than one mile, when the west end of South Passage Island will be on with the peak of False Durian, in 25 or 27 fathoms.

Rocky Patch. The small patch of rocks, half a mile W. by S. from the south end of Red Island, is dry at low tide, with deep water all round, and between it and the island. When on the centre of the patch, the N. W. brow of Red Island is on with the south end of the North Twin, and the east end of South Passage Island very little to the eastward of the peak of False Durian.

Red Island. RED ISLAND, by observations taken upon it, is in lat. 0° 51′ N., lon. 103° 39′ E., or 3° 17′ East from Prince of Wales Island by chronometers. Variation by Theodolite 1° 56′ E. (Tides.) High water at 10 hours on full and change of moon, and the tide rises 10 or 11 feet. This island is oblong, covered with trees, of moderate height, and may be seen 15 miles. The passage between it and the Twins ought not to be attempted, (Rocks.) for in mid-channel lies a dangerous rock, level with the surface of the sea at low water spring tides, and the soundings are irregular, affording no guide. When upon this rock, the N. E. end of Red Island is on with the South Peak of Great Carimon, and the centre of the Twins N. $\frac{3}{4}$ E. From the west end of Red Island, (Rocky Islet.) North a quarter of a mile, there is a small rocky islet with a tree on it, surrounded by rocks dry at low water, between which and Red Island there are depths of 15 and 16 fathoms.

Twins. The Twins, two small round islands, lying a little more than a mile to the N. E. of Red Island, bear N. N. E. and S. S. W. of each other, and are of moderate height. Distant three-quarters of a mile to the N.W. of the North Twin lies a dangerous and (Rocky Shoal.) extensive rocky shoal of coral, dry at low water spring tides, having from 10 to 17 fathoms all round: when upon it, North Passage Island bore South, the N.W. end of Dolphin Island, a rocky point, was a little to the westward of the Peak of Great Durian, and the east end of Red Island S. by W.

Dolphin Island. Dolphin Island is about $1\frac{1}{4}$ miles in extent,* fronted by a coral reef projecting 200 yards from it to the westward, near to which the water deepens irregularly from 13 to (Shoal.) 20 fathoms. There is a shoal to the westward of Dolphin Island, 400 yards in extent, of an oval form, steep all round, and dry at low water spring tides. When on the centre of this shoal, the south end of Red Island bore N. 20° 48′ W. by theodolite, the centre of North Passage Island S. 4° 17′ W., the S.W. point of Dolphin Island on with a sandy point of Pulo Mogo, Sabon Hill N. 74° 21′ W., distant from Dolphin Island one mile.

Tides. Throughout these straits the tides are very irregular, rendering it difficult to ascertain either their direction or velocity. In August and September, the rise and fall was

* The north end of Pulo Mogo approaches near to Dolphin Island, from whence it extends S. Eastward nearly to Great Durian, it being a high large island.

found generally to be between 10 and 11 feet, sometimes running from 3 to 4 knots per hour during the springs, at other times, not more than $2\frac{1}{2}$ knots at the same period. This irregularity appears to be produced by the prevailing winds in the north or south entrance of the straits, forcing the tides through in one direction, for 12 or 18 hours at a time, although the rise and fall on the shore was regular. But sometimes the tides run with regularity.

The ripplings might be alarming to a stranger; they appear to be caused by the uneven bottom, and the resistance the tides meet with from the steep reefs and numerous small islands. Ripplings.

PHILLIPS CHANNEL, or the N. E. ENTRANCE of the STRAITS of DURIAN, formed between the numerous islands fronting Pulo Battam to the S. E., and Long and Round Islands to the N. W., appears to be free from danger, with good anchorage, and is a short route for vessels proceeding to or from Singapore. Long and Round Islands, being lined by rocky reefs, ought not to be approached under three-quarters of a mile: if standing to the westward of the south end of Round Island, a ship should go no farther in that direction than to bring the N.W. end of Long Island on with the centre of the Rabbit, as four rocky reefs lie to the S.W. of Red Island. When upon the S. E. end of the southern one, Red Island is in one with the Rabbit, and the centre of Round Island bearing E. 5° S.: between the latter island and these shoals the soundings are irregular. Phillips Channel. Directions.

Cap Island, named from its appearance, is a rock, about 40 feet in height, with a flat top, and perpendicular sides, surrounded by a reef to the distance of about 300 yards, near to which the depths are 10 and 11 fathoms, with 14 fathoms a little farther out. It would be imprudent to pass to the eastward of Cap Island, as a reef of rocks is situated between it and the bluff headland to the eastward. Cap Island.

Pulo Doncan, about 4 miles to the southward of Cap Island, are two low woody islands, fronting a deep bay, which is formed by a group of beautiful islands, some of which are inhabited: as Pulo Doncan is surrounded by reefs, it ought not to be approached nearer than a mile. Pulo Doncan.

TREE ISLAND, or REEF, at the western entrance of the Straits of Singapore, is formed of sand and rocks, with two bushes or small trees on it, which are all that is visible at high water spring tides, as the sand is then overflowed. The reef projects from it to the N.W. nearly a mile, with 9 and 10 fathoms close to the rocks. From the south brow of the Rabbit, off Barn Island, the N. W. part of the reef off Tree Island is on with the North Peak of the Great Carimon bearing S. 80° W. Between Tree and Red Islands there are two sunken rocks, that nearest Tree Island being distant one mile from the S. E. Tree, and bearing E. $\frac{3}{4}$ S. from that tree, and from Red Island N.W. by W. nearly 2 miles, the north end of the latter being on with the north end of Long Island, and the south brow of the Rabbit bears E. by N. $\frac{3}{4}$ N. from this rock, which is about 30 or 40 feet in circuit, with not more than 3 feet on it at low water spring tides: the depths close to it are from 7 to 10 fathoms, and a little way off it from 15 to 20 fathoms. Tree Island. Sunken Rocks.

The other, thought to be the KENT ROCK, is longer than the former, distant from it half a mile, and has $1\frac{1}{2}$ fathoms on it at low water spring tides; from which the S. E. tree on Tree Island bears N. $\frac{3}{4}$ W. about $1\frac{1}{4}$ miles, the centre of Red Island on with the north end of Long Island S. E. by E., and the south brow of the Rabbit N. E. by E. $\frac{3}{4}$ E.: the soundings near it are from 5 to 10 fathoms, deepening quickly

to 15 and 16 fathoms. The places of these rocks may easily be perceived when the tides run strong, by the strong ripplings over them ;* observing that the danger lies in the smooth part, close to the break of the rippling. These rocks render the passage between Tree Island and Red Island narrow and unsafe ; it ought not to be attempted.

DIRECTIONS.

From Banca to Durian Strait.

DEPARTING FROM BANCA STRAIT, and being abreast of Batacarang Point in 7 fathoms, bound to the Strait of Durian, a N.N.W. ½ W. course should be steered towards Pulo Varela, distant about 22 leagues ; but the bank along the Sumatra coast in this space being very flat, the soundings are usually the best guide, by keeping in from 5½ to 7 fathoms ; and in working, the coast may be approached to 5 fathoms. The tides near the shore are generally strong ; in the offing they are irregular, and currents sometimes prevail.

Tides.

In passing through the south channel, between Pulo Varela and Tanjong Bon, keep in 11 or 12 fathoms towards Pulo Varela, to give a berth to the bank of hard ground projecting from Tanjong Bon, and from thence along the coast to the westward, which is steep from 6 or 5 fathoms ; but in working, it may be approached occasionally, with care, to 8 or 7 fathoms. Being through the narrow part of the passage between Tanjong Bon and Pulo Varela, which is about 6 or 6½ miles wide, a course N.W. by W. should be steered for the Calantigas, keeping along the coast in 9 to 12 fathoms; with a working wind, the Sumatra coast may be approached to 6 or 7 fathoms. In this track attention to the tides is indispensable, for they are often irregular, sometimes setting out of Jambee River to the N. Eastward 2½ or 3 miles per hour : and the Coast Bank to the westward of Tanjong Bon, to the distance of 4 or 5 leagues, is nearly dry at low spring tides in some places, 4 or 5 miles from the shore.

Tides.

When steering towards the Calantigas, the southernmost of these islands must not be brought more westerly than N.W. by N. until Reef Island is bearing to the southward of E. by S. to avoid the Speke Rock.

Having passed the Calantigas, a course about North and N. ½ W. should be steered for the southernmost of the Three Brothers, bearing from the Calantigas N. by W. ½ W. distant about 22 leagues : the Sumatra coast may be approached in working to 8 or 9 fathoms in some places ; but the spit that stretches out from Tanjong Bassoo to the N. Westward of the Calantigas, being steep to, ought to have a berth in passing. The best guide is to keep in 14 to 16 fathoms, taking care not to deepen above 18 or 19 fathoms to the eastward, particularly as the distance from the Calantigas is increased, for the ground on that side is foul, and improper for anchorage.

Eastern Channel.

TO ENTER the Strait of Durian by the EASTERN CHANNEL, a berth of 1 or 2 miles may be given to the South and Middle Brothers, by rounding them in 10 or 12 fathoms, and on drawing near the North Brother, give a proper berth to the reef that projects from it to the south-eastward, taking care not to stand far over towards the Eastern Shoal. This will not be approached too close, if the beach on the Middle Brother be kept well in sight from the deck ; or in working, if you get on the edge of the overfalls in standing to the eastward, immediately tack, and stand towards the Brothers to 10 or 11 fathoms. When the southern point of Great or South Durian is approached, three islets near it, called the Tombs, will be discerned, and Sabon Hill, bearing about W. by N. ¾ N., making like two islands, which may be

* Small fishing boats may often be seen on these rocks.

mistaken for the Carimons. Having passed the North Brother on the east side, at 1½ or 2 miles' distance, haul to the westward, giving a berth of 1 or 1½ miles to the Tombs and the southern part of Durian, as some rocks under water lie rather more than half a mile to the S.W. of the Tombs.

TO SAIL through the WESTERN CHANNEL, after the South Brother is approached, steer to the westward of it at 1½ or 2 miles' distance, and proceed to the northward in 8 to 12 or 14 fathoms, about mid-channel between the other Brothers and the eastern part of False Durian, to avoid the foul ground contiguous to the Brothers, and the rocky islet contiguous to the east end of False Durian. Western Channel.

Having cleared the Brothers by either of these channels, Passage Islands will be seen to the N.W.; there are two small islands on the east side the passage, having a flat island on the west side, called Princes Island, opposite the North Passage Island. There is a channel to the eastward, betwixt Passage Islands and Little Durian, which is not frequented, not being so convenient as the former; but in a case of necessity, a ship may sail betwixt any of these islands, giving them a berth of one mile, as their points are generally rocky and foul ground. From the Brothers to the northward.

After leaving the Brothers, steer for Passage Islands; in mid-channel the depths will be generally from 17 to 22 fathoms. When they are approached, Red Island will be discerned, which lies about 6 miles N. ½ W. from the North Passage Island, and may be known by two islets to the north-eastward of it, called the Twins. There is a safe passage, with care, in day-light, between Middleburg Shoal and Red Island; but as a sunken rock lies W. by S. half a mile from the latter, and the depths being from 17 to 26 fathoms, with some overfalls, the channel to the westward is preferable. There is a narrow passage, with 15 fathoms water, betwixt Red Island and the sunken rock just mentioned, also a passage close on the east side of Red Island; but as rocks lie about a mile N.W. from the Twins, and others to the E. S. E. of Red Island about half a mile, which bound this passage on the east side, it ought not to be attempted by a stranger. Passage Islands.

If the passage to the eastward of the Middleburg Shoal be adopted, which is two miles wide, the best track is about mid-way betwixt it and Red Island, in 19 to 16 fathoms, mud. There is a shoal or sunken rock detached, about half a mile from the N.W. part of Red Island, having 19 and 20 fathoms close to it on the west side, and 15 to 19 fathoms in the narrow passage betwixt it and Red Island. The country ship Warren Hastings passed between Red Island and this detached shoal, March 31st, 1789, at 11 A.M.: when in mid-channel between Red Island and a reef of rocks to the westward of it, they bore respectively E. by N. ½ N. and W. by S. ½ S., each a little more than a mile distant. This narrow passage ought not to be followed; and the other, between Middleburg Shoal and the reef to the westward of Red Island, also requires care. When Middleburg Shoal is conspicuous, you may borrow towards it with a commanding breeze; otherwise, it will be prudent to keep mid-channel between it and Red Island. The peak of Great Durian bearing S. E. ½ S., or the northern Passage Island in one with the west end of the peak of False Durian, will lead fair through the channel betwixt Red Island and Middleburg Shoal. In working, do not bring the peak of False Durian above a ship's length open to the westward of the northernmost Passage Island, nor nearer to the reef off Red Island, than to bring that peak nearly on with the southernmost Passage Island. Here the tides are very strong between Middleburg Shoal and Red Island, the flood setting to the southward, and the ebb to the northward, from 3 to 4 knots on the springs; high water about 5 hours at full and change of moon. Tides.

From Passage Islands to the Little Carimon.

The channel to the westward of Middleburg Shoal is preferable, being about $2\frac{1}{2}$ miles wide, with mostly regular soundings from 16 and 17 fathoms close to the shoal, decreasing gradually towards the Sabon shore over a bottom of soft mud, proper for anchorage. When clear of the North Passage Island, haul to the westward for the Sabon shore, then steer about N. N.W. along it, in 7 fathoms, which will lead in the fair track betwixt that shore and Middleburg Shoal. In working, do not deepen above $8\frac{1}{2}$ fathoms, as there are 9 fathoms very near the western edge of the shoal: but the Sabon shore may be approached to $5\frac{1}{2}$, or to 5, or even $4\frac{1}{2}$ fathoms in a small ship. After steering along the Sabon shore in about 7 fathoms until Red Island bears East or E. by S., edge out a little, about N. by W., or North, and deepen to 10 or 12 fathoms; continuing to keep in these depths, steer to the northward, taking care to give a good berth to the south end of Great Carimon, for a bank of $2\frac{3}{4}$, 3, and $3\frac{1}{2}$ fathoms sand and mud, projects $2\frac{1}{2}$ or 3 miles out from the south point of that island. When abreast of this point, the distance of 4 or 5 miles should be preserved from the east side of Great Carimon, and the Little Carimon may be rounded at any convenient distance, if bound to the northward.

Directions from Little Carimon to the southward.

A SHIP being abreast of Little Carimon, with its north end bearing West from 2 to $2\frac{1}{2}$ miles, the course is S. S. E. $\frac{1}{2}$ E. with a fair wind, which will carry her clear of the Mud Banks fronting the low land of the Great Carimon, in soundings from 7 to 8 fathoms, until the north end of Pulo Pandan is on with the north end of Sabon, then the strait between the Great Carimon and Sabon will be open. With a working wind, from Little Carimon, the soundings are the best guide in standing towards the mud banks fronting Great Carimon, which ought not to be approached under 6 fathoms, and in this line of soundings, Little Carimon will bear N.W. $\frac{3}{4}$ N.; the depths in the offing are from 14 to 16 fathoms, mud.

When the strait between Great Carimon and Sabon is open, the soundings become irregular; and here, caution is requisite with a working wind, as the tides set strong through this strait to the westward at times. When the north end of Pulo Pandan is on with the north end of Sabon, and distant from the former 3 miles, in 7 fathoms, a course S. by E. will carry a vessel clear of the mud bank that fronts Pulo Booroo, and mid-way between it and Middleburg Shoal, till the north end of Red Island is on with the south end of the South Twin, and the soundings will be irregular, from 5 to 9 fathoms.

In working, a vessel may stand out to a moderate distance at discretion, but she must not approach the shore of Pulo Booroo nearer than 1 or $1\frac{1}{4}$ miles in 5 to 6 fathoms. The mud bank extends southward as far as Deep Water Point, a projection of Sabon Island, about 5 miles to the S. S. E. of the south end of Pulo Booroo; the soundings decrease regularly on the edge of the mud bank, when the south end of Pulo Booroo bears West; there is a small isle, called Clay Island, covered with straggling trees, close to this end of Booroo, and which appears to join it. With this bearing, the mud bank may be borrowed on to any depth at discretion. In standing off towards Middleburg Shoal, do not approach Red Island nearer than to bring the west end of North Passage Island to touch the east end of South Passage Island; and to avoid Middleburg Shoal, bring the north end of Red Island on with the bluff headland to the eastward, which will lead to the northward of the shoal, or bring the north end of Red Island on with the south end of the Twins, which will lead to the southward of it; the latter transit line also clears to the northward the rocky patch lying to the westward of Red Island. A passage to the eastward of the Middleburg Shoal may be made by keeping the east point of North Passage Island in one with the

N.W. Peak of False Durian, which will lead mid-way between the shoal and the rocky patch: the water deepens towards the Middleburg Shoal, it being steep to all round. To prevent being horsed upon it in light winds, caution is requisite, as the tides run here from 3 to 4 miles an hour at times, with strong ripplings, which are likely to prevent a vessel from steering.

When clear of Middleburg Shoal, and of the shoal to the westward of Dolphin Island, as the straits to the southward are free from danger, a direct course may be steered for the eastern end of False Durian; the Passage Islands, and also Princes Island, a low flat island near the western shore, may be approached to any convenient distance. The soundings throughout are very irregular, decreasing towards the western shore, where there is good anchorage. Directions.

When distant $1\frac{1}{4}$ miles from the N. Westernmost and largest of two rocky islets which lie off the N.W. end of False Durian, and it being on with the peak of the latter, there is a bank of hard sand and stones three-quarters of a mile in extent, having $4\frac{1}{2}$ fathoms the least water, and from 10 to 6 fathoms close to; and when on it, South Passage Island is in one with the north end of Little Durian.

In standing towards the south end of Great Durian, come no nearer the Tombs than one mile, when South Passage Island will bear N.W. by W. $\frac{1}{4}$ W., as a small reef of coral rocks lies half a mile from the South Tomb, near to which the soundings are from 20 to 29 fathoms. The best anchorage in this part of the straits will be found near the eastern shore of False Durian, in 12 to 14 fathoms, three-quarters of a mile off shore. With a working wind, keep near False Durian, where the tides are much stronger than in mid-channel.

If to proceed through the western channel betwixt the Brothers and False Durian, steer for the east end of the latter, and pass about mid-channel, between it and the North Brother: proceeding to the southward, continue to keep in about mid-channel between the other Brothers and the east side of False Durian; but with a working wind, either side of the channel may be borrowed on.

To pass to the eastward of the Brothers, after rounding the Tombs, steer East or E. by S., keeping 2 miles from the North Brother in passing it on the north and east sides, where the water will shoal to 12 or 13 fathoms; then steer about S. by E., attending to the set of the tide, to pass the Middle and South Brothers at the same distance, not borrowing nearer them than 10 or 12 fathoms. With a working wind, do not stand too far over towards the Eastern Bank, but tack immediately, if irregular soundings are got on the overfalls near it, nor so far out, as to sink the beach of the Middle Brother from the deck. The depths in this channel will be mostly from 10 or 12 fathoms near the Brothers, to 16 or 18 fathoms near the overfalls on the edge of the Eastern Bank or Shoal.

BEING abreast of the South or Great Brother, at about 3 miles' distance, steer South or S. by W. until the Brother is brought to bear N. N.W.; and whether you have passed to the eastward or westward of the three Brothers, after having brought the South Brother to bear N. N.W. or North, steer for the Calantigas about a South and S. by E. course, and endeavour to keep in from 14 to 16 fathoms. With a working wind, the best track is to stand to the eastward until in 17 fathoms, about mid-channel; and into 12 fathoms towards the Sumatra shore; but not under this depth, in passing Tanjong Barroo and Tanjong Bassoo, as the shoal fronting the latter is steep to, with 8 to 14 fathoms near its edge. After passing Tanjong Bassoo, the coast may be approached occasionally to 6 or 7 fathoms; but the best track with a fair wind, is about

mid-channel betwixt it and the Calantigas, or pass to the westward of these islands about 2 or 2½ miles, at discretion.

Having passed the Calantigas, the southernmost of these islands must be kept to the northward of N.W. by N. until Reef Island bears East or E. ½ N., to avoid the Speke Rock, bearing S. E. from the South Calantiga; the proper track is, to keep along the Sumatra coast in 9 to 12 fathoms, in steering from the Calantigas to Pulo Varela, borrowing to 6 or 7 fathoms towards the coast, with a working wind. Great care is, however, necessary, if running here in thick weather, or in the night, on account of strong tides setting into, or out of the rivers; for the Princess Charlotte, at 1 A.M. April 11th, 1813, steering S.E. by E., shoaled suddenly from 14 to 8 and 5 fathoms, then grounded on a bottom of sand and mud, on the great bank that fronts the coast to the westward of Tanjong Bon and Pulo Varela, opposite the mouth of Jambee or Sambir River. At day-light Pulo Varela bore E. N. E., Lingin Peak N. N. E. ½ E., Tanjong Bon S. E. by E. ½ E., the Sumatra shore distant about 2 or 2½ leagues, observed lat. 0° 55′ S. Having grounded at high water, the tide fell from 18 to 10 feet, and with every exertion, by rafting the spars along-side, starting water, and throwing 1,332 bags of rice overboard, to lighten the ship, she could not be floated off until the 15th, four days after she grounded on the bank.

Pulo Varela bears about S. E. by E. 10 leagues from the Calantigas, and may be passed about 2 or 3 miles' distance in 10 or 12 fathoms; but the spit surrounding Tanjong Bon, on the opposite side the channel, although steep from 5 fathoms, may be approached to 7, or even to 6 fathoms in working.

From Pulo Varela to Batacarang Point, at the entrance of Banca Strait, the course is about S. S. E. ½ E. 22 leagues, and the whole of the bank fronting the coast is in this space very flat, with regular soundings upon it; the best guide, therefore, after leaving Pulo Varela, is to keep along the coast in from 5½ to 7 fathoms, until Batacarang Point is approached; and 6½ or 7 fathoms are the proper depths to preserve, when passing this point and entering into Banca Strait, to avoid the Frederic Hendric Rocks, on the east side the channel: with a working wind, the point may be approached to 5½ or 5 fathoms.

MALACCA STRAIT.

WINDS AND CURRENTS.

General Remarks.

A BRIEF description of the prevailing winds and currents, near Achen Head and the Nicobar Islands, is given in Volume First of this work, under the head of "Outer Passage to places on either side the Bay of Bengal, &c.," and directions for sailing to and from Achen and Malacca Strait are given in the last three chapters of that volume. Farther directions, with a more particular account of winds and currents at the *entrance* of the strait, have been given in this present volume, under the title of "West Coast of Sumatra," in Section 1st, where Achen and the adjacent islands are described; and it here seems necessary to give a brief summary of the winds and currents which prevail *inside* the strait; with some additional instructions for sailing between the strait and the Coromandel coast, or Ceylon.

S.W. monsoon.

THE SOUTH-WEST MONSOON prevails outside Achen Head from April to October, and seldom blows far into the strait, particularly near the Sumatra side; for the monsoon being repelled by the mountains and high land stretching from Achen along the coast of Pedir, it is succeeded by light variable winds and calms, with occasional land breezes, or sudden strong squalls from the Sumatra coast in the night, which require great caution. If Pulo Rondo is passed with a strong S. W. monsoon, it will be likely to fail when to the eastward of Pulo Way, having then Achen Head in the direction of the wind.

To enter the strait by the Pedir coast.

Some navigators prefer the track from Pulo Rondo along the coast of Sumatra to Diamond Point, and from thence to Pulo Varela and the Arroas. Sometimes, speedy passages have been made by this route, both early and late in the season; if adopted, it is advisable to keep near the Pedir coast, to benefit by the land and sea breezes, which prevail only *near* the shore, the latter not extending farther than a few miles from the land. Light airs and calms also prevail in the offing, and the current generally setting strong along the coast of Pedir to the westward in the S.W. monsoon, a ship is liable to be drifted about, or carried back towards the entrance of the strait, unless she keep close to the coast, where there is anchorage in many places within 1 or 2 miles of the shore.

Route along the Malay side preferable.

This track is now seldom pursued, for, exclusive of the prevailing light baffling winds and westerly currents, it is also subject to dangerous lightning, and sudden severe squalls from the land in the night. The route on the other side the strait, adjacent to the Malay coast, is therefore preferred, because there is less lightning on this side, *seldom* any severe squalls, and few calms; but generally variable winds, or land and sea breezes, and sometimes a favourable current, with regular tides near the land, as a ship proceeds to the eastward. The middle of the strait should, if possible, always be avoided, especially about Pulo Pera,* where calms predominate in the South-west monsoon.

South-east and southerly winds prevail much throughout the strait during the South-west monsoon, but they vary frequently in every direction, although those between S. E. and S.W. usually predominate.

Sumatras.

SUMATRAS, or squalls, from the south-westward, are often experienced in the South-west monsoon; also North-westers, or squalls from this direction, are then more common than in the other season. Sumatras generally come off the land during the first part of the night, and are sometimes sudden and severe,† accompanied with loud thunder, lightning, and rain; they are experienced throughout the strait, particularly in the vicinity of the Pedir Coast, and between Parcelar Hill and the Carimons. Here, they often blow for 6 or 8 hours at a time, either in a strong or moderate gale, the commencement being mostly sudden and severe; for in Malacca Road, where they generally begin between 7 and 8 P.M. and at midnight, many shpis part their cables, and some have been driven by these squalls on the mud-bank that lines the shore.

North-westers.

NORTH-WESTERS do not prevail so much as the Sumatras, and although most common in the northern part of the strait, between Achen Head and the Arroas, they

* Near this island, many ships have been six or eight days delayed by calms during the S.W. monsoon.

† Ships are liable to lose their top-masts in these squalls; one ship lost all her top-masts, the commander having been *erroneously* informed, that no squalls in Malacca Strait required precaution, excepting those which came from N. Westward.

sometimes blow through it to the Carimons; or even through Singapore Strait to Pedro Branco. These winds are sometimes severe at their approach, but their strength soon abates; they are mostly preceded by a *black cloudy arch*, rising rapidly from the horizon towards the zenith, allowing not more than sufficient time to reduce sail after its first appearance; but at other times, the approach of these squalls is more slow. Like Sumatras, the North-westers are sometimes accompanied by thunder, lightning, and heavy rain. If a ship be at anchor stopping tide, during a calm, or otherwise, and a black cloud begin to rise, indicating a North-wester, the anchor ought to be instantly weighed, if bound to the southward, before the squall reaches her; for as the first part of these squalls usually blows strong, she may find it impossible to weigh the anchor, and therefore be deprived of benefiting by them.

The passage through the strait is greatly facilitated by running in the night, for steady breezes often prevail during the absence of the sun, when calms and faint airs are experienced in the day.

Remarks on the navigation of the Strait.

To persons unacquainted, Malacca Strait appears an intricate navigation; but as the channels are mostly spacious, with good anchorage, it certainly is not dangerous, with common prudence. Many ships keep under way day and night, in most parts of the strait, and often pass through, without anchoring above once or twice. To persons a little acquainted, or even to strangers, there is little danger by keeping under way with clear weather during the night, in any part of the strait, except when passing the Two-and-a-Half Fathoms Bank, between the Arroas and Parcelar Hill; passing Tree Island when coming from the northward; from thence to St. John's, if not very clear; and going out betwixt Pedro Branco and the reef off Point Romania. Ships which sail well will gain ground during neap tides, with a moderate working wind in most parts of the strait, against the tide or current, if every advantage is taken of the favourable shifts of wind. If the wind is directly contrary, it may sometimes be found impossible to gain ground, even against neap tides, between the Arroas and Mount Mora, where they run with greater strength than in any other part of the strait. A stream anchor is very convenient for stopping tide in most parts of the strait; and in calms during the day, a kedge is sometimes sufficient for that purpose, where the tides are not strong.

North-east monsoon.

THE NORTH-EAST MONSOON may be considered the fair season in Malacca Strait, the weather being generally settled; seldom are any hard squalls experienced, and there is less thunder, lightning, and rain, than in the other season. Northerly and N. E. winds prevail, particularly near the Malay side of the strait; the breezes usually blow from that shore during the night. The North and N. E. winds frequently blow strong betwixt Pulo Jarra and the islands at the north end of the strait; ships, therefore, coming from the southward, and bound into the harbour of Prince of Wales Island in this monsoon, should, after passing Dinding, keep along the edge of the mud-bank which lines the coast, that they may not be delayed in reaching the harbour with the strong N. E. winds and short sea, likely to prevail in the offing, when near Prince of Wales Island.

Ships can proceed through the strait in both monsoons whether bound to the northward or southward; but those going to the northward generally make the quickest passages, and sometimes get through, without anchoring above once or twice.

Current and tides

THE CURRENT, in Malacca Strait, where tides do not prevail, sets often to the northward; in the middle of the strait, it generally sets in that direction, from the

Arroas to Junkseylon and Pulo Rondo, in both monsoons; but sometimes to the southward, along the Malay side, during the North-east monsoon. In the entrance of the strait, betwixt the Pedir coast, Pulo Bouton, and Junkseylon, the general course of the current is to the northward all the year round: but along the Malay coast, and amongst the islands contiguous to it, regular tides mostly prevail. The current runs along the coast of Pedir, out of the strait to the westward during the South-west monsoon, whilst it is setting to the northward between Pulo Rondo and Junkseylon; but close in with the Sumatra coast there are tides from Diamond Point to the south-eastward. About the Arroas, the current sets often strong to the north-westward, with a slack, or weak flood at times, setting to south-eastward; from thence to the Carimons, regular tides prevail throughout the strait from one side to the other, and the ebb which sets to the N.W. runs longer, and is stronger than the flood. The flood sets to the S. E. as far as the Carimons, and between the north end of Little Carimon and Tree Island, meets with the flood running in from the China Sea through Singapore Strait; after this junction, the flood sets to the southward, towards the Straits of Durian.

PASSAGES TO AND FROM MALACCA STRAIT.

Passage from Madras or Ceylon, to Malacca Strait in the North-east monsoon.

SHIPS from MADRAS or CEYLON, if bound to Malacca Strait, in the North-east monsoon, will be liable to have a tedious passage; they ought to tack at times with the favourable shifts, and, if possible, keep well to the northward, to be enabled to pass between the Little Andaman and Car-Nicobar Islands, or through the Sombreiro Channel, if they come from Madras. Those which come from Ceylon in this season will probably have a long passage of 20 to 30 days, even if they sail tolerably: they ought to keep well towards the south end of the Great Nicobar, in entering the strait, if the wind admit; but with caution, may enter it by the Surat Passage, if they fall to leeward of Pulo Brasse, and find difficulty in getting round the islands off Achen.

During the strength of the North-east monsoon, in December and January, it is frequently very difficult, in an indifferently sailing ship, to get from Achen along the coast of Pedir to Diamond Point,* where the current mostly runs to the westward, whilst it is setting to the northward in the offing; therefore, ships in these months ought to stand off from the Pedir coast, and endeavour to get in with Junkseylon Head, or near the islands on the Malay side, where favourable winds and land breezes will be found, to carry them along that coast to the south-eastward.

Passage from Madras in the South-west monsoon.

SHIPS from Madras in the South-west monsoon have the choice of passing to the southward of the Nicobars, or through any of the channels between these islands and the Little Andaman; the Sombreiro Channel being safe, and the most direct route, is preferable when observations are obtained; a ship ought to borrow towards the south side of the entrance in approaching it, because the currents near, and among these islands, run mostly to the northward in the South-west monsoon. Ships which come from any part of the Coromandel coast to the northward of Madras should pass betwixt the south end of the Little Andaman and Car-Nicobar, and the same channel may be adopted by them in the North-east monsoon, borrowing, in either case, towards

* The Surat Castle got round Achen Head in December, 1807, and was nearly six weeks from thence to Diamond Point, and from the latter place, she got to Prince of Wales Island in two days.

the windward shore; when through it, a course should be steered to give a proper berth to Junkseylon Head, and to pass Pulo Bouton at a moderate distance.

SHIPS from Ceylon, bound into Malacca Strait during the South-west monsoon, should steer to pass nearly mid-channel between Pulo Rondo and the south end of the Great Nicobar, keeping in about lat. 6° 20′ N., when passing through the channel. If the weather be cloudy, and the wind strong from S.W. or S. S. W., and if the latitude is not known by observation, they should borrow towards the islands off Achen, in case of a northerly current; but when the wind prevails from westward, the current sometimes sets southerly; great caution is therefore requisite, if the latitude is not known, when running into the entrance of the strait in the night, during dark blowing weather.

A ship bound to Achen, in this season, ought to keep well to the southward, to fall in with Achen Head; then, with great care, she may proceed through the Surat Passage;* but the Bengal Passage, close round the north end of Pulo Brasse, and along the east side of that island to the road, is preferable.

Passage along the Malay side of the Strait to the Arroas.

WHETHER the Sombreiro Channel, or that to the southward of the Great Nicobar, be chosen, in order to avoid baffling light winds adjacent to the coast, inside of Achen Head, a wide berth should be given to the islands off it, and a course should be steered eastward for Pulo Bouton. By keeping well out from the land of Sumatra, and falling in with Pulo Bouton bearing about East or E. by S., sometimes brisk westerly winds will continue up to Penang, when calms and faint breezes prevail near the coast of Pedir. This does not always occur, for light airs prevail at times, from the coast of Pedir directly across to the Malay side; it is, however, the preferable route, for considerable advantage is generally gained by avoiding the islands off Achen, and the coast of Sumatra, during the strength of the South-west monsoon. When the winds are light and baffling from southward, a ship may *sometimes* be carried to the northward of Pulo Bouton in steering for it, by the northerly current prevailing in the entrance of the strait; but after approaching the islands on the Malay side, she will get to the south-eastward along that coast without difficulty, and find there N. Westerly and variable breezes. After passing to the westward of Pulo Bouton at any convenient distance, from 2 to 7 leagues, and if not bound to Penang, a course should be steered for the Sambilangs, keeping within a moderate distance of the coast, in soundings of 35 to 20 fathoms. With a working wind, the west side of this island may be approached to 10 or 12 fathoms, and the extensive mud bank that stretches along the coast from thence to Pulo Dinding may be borrowed on, to the same depths, if the lead is kept briskly going; observing, that the water shoals rapidly on the edge of it when under 15 fathoms. This bank is all soft mud, and projects in some places about 3 and 4 leagues to seaward from the low coast of Perah; small vessels may borrow on it to 7 or 8 fathoms, but if the helm is put down in a large ship in 9 or 10 fathoms, when standing towards the bank with a fresh breeze, she will in some parts be in 7 or 8 fathoms before the sails are trimmed on the other tack.

After passing betwixt the Sambilangs and Pulo Jarra, at any discretional distance from either side, as circumstances require, with a fair wind, a S. S. E. course will be

* The Surat Passage is not perfectly safe for large ships working out in the S.W. monsoon, which has been experienced by the loss of the ship Harriot, of Calcutta.

proper to get soundings on the western extremity of the North Sand, or to get sight of the Arroas bearing to the S. Eastward. With a contrary wind, it is prudent to keep near the coast, from the Sambilangs a considerable way to the southward, then edge out, to round the west end of the North Sand, and get a sight of the Arroas; afterwards to work near the edge of the sand, borrowing on it *occasionally* to 10 or 11 fathoms, in order to benefit by the tides, and preserve moderate depths for anchorage.

SHIPS from MALACCA STRAIT, bound to Madras or the Coromandel coast, during the N. E. monsoon, should keep near the Malay side and the adjacent islands, until they reach Junkseylon; which, with the islands off its southern extremity, may be rounded at any convenient distance. From Junkseylon, a course to pass betwixt the Car-Nicobar and the south end of Little Andaman may be adopted, if early in the season; or the Sombreiro Channel may be chosen at discretion, if not bound to the northward of Madras; in December and January, care must be taken to fall in with the coast a little to the northward of the intended port. Passage from the Strait towards Madras, or the Coromandel coast in the N. E. monsoon.

Ships bound to Madras in the S.W. monsoon must keep along the Sumatra side of the strait, near the Pedir coast, to benefit by the westerly or eddy current contiguous to it; they ought to go out by the Bengal Passage, after reaching Achen, proceeding close along the east side of Pulo Brasse, and rounding the islands at its north end. The passage will *generally* be tedious in this monsoon, after clearing Achen Head, although some ships have reached Madras in 14 or 15 days from that place, during the strength of the monsoon, by taking advantage of every favourable change of wind to obtain westing, and tacking with those changes as most expedient. Passage to Madras in the S.W. monsoon.

SHIPS bound to Ceylon in this season, after clearing Achen Head, must endeavour to get to the southward of the equator, giving the islands off the west coast of Sumatra a wide berth if possible. Having got into S. Easterly winds, a westerly course should be pursued until on the meridian of the intended port; then a north course for it may be followed, observing to fall in with the land on the west side of Point de Galle, if bound there; or with the south-east part of the island, if bound to Baticolo or Trincomalee; for strong westerly winds, and easterly currents, prevail along the south coast of Ceylon during the S.W. monsoon. Ships seldom sail from Malacca Strait to Madras or Ceylon in this season, and it may sometimes be found impracticable to accomplish the passage in those which sail indifferently by the wind. Passage to Ceylon during the S.W. monsoon.

Ships bound to Ceylon during the N. E. monsoon usually experience favourable weather and a fair wind. In proceeding out of the strait, they may pass on either side of Pulo Pera at discretion, and borrow towards Pulo Rondo, or towards the south end of Great Nicobar, as seems expedient; if they fall accidentally to leeward of Pulo Rondo, they may pass safely through the channel formed betwixt the ledge of rocks lying about 2 miles to the southward of it, and Pulo Way. After taking a departure from Pulo Rondo, or the south end of Great Nicobar, a direct course should be steered to fall in with Ceylon to the northward of Trincomalee, if bound to that port. If bound to Point de Galle, Colombo, or the Malabar coast, the land should be made to the northward of the Little Basses, particularly in the night; for there, the lead, if kept going, will give sufficient warning before the land is approached too closely. In day-light, a course may be steered direct for the Great Basses, if the wind blow steadily at N. Eastward, allowing for a probable southerly current running along the coast; and as this current generally prevails in the strength of the N. E. monsoon along the east side of Ceylon, it is prudent, even in day-light, to fall in with the coast a little to Passage to Ceylon in the N. E. monsoon.

the northward of the Great Basses; or to the northward of the Little Basses, when the wind hangs northerly, or when it inclines to be light and variable. After rounding the Basses, ships bound to the Malabar coast ought to keep close to Ceylon, as if they were bound to Point de Galle, or Colombo; and they ought to coast along nearly to the latter place, before they stretch off for Cape Comorin.

COAST OF PEDIR FROM TANJONG BATOO TO DIAMOND POINT.

Coast of Pedir.

THE NORTH PART of SUMATRA, called the Coast of Pedir, extends from Point Pedro, the northernmost point of the island, nearly E. $\frac{3}{4}$ S., about 44 leagues to Diamond Point, its eastern boundary. This coast is low in several places close to the sea, but the country a little inland is all very high, with some remarkable mountains.

Tanjong Batoo, and adjacent coast.

TANJONG BATOO, generally called Point Pedro, situated about 4 or 5 leagues E. N. E. from Achen Road, terminates in a gentle slope, and is covered with large trees; the coast between it and Achen may in some parts be approached to 10 fathoms, but the proximity of the point must be avoided, as breakers and foul ground project around it to a considerable distance; yet in passing it during the night, it is proper not to go outside of 16 or 17 fathoms, keeping the lead going, that Pulo Malora may have a proper berth to the northward; for this small island lies to the N. Eastward of Achen Road, and rather nearer to Tanjong Batoo than to Pulo Way. Tanjong Batoo Pootie is known by a large white rock off it, and bears E. 5° S. from Tanjong Batoo, distant about 4 leagues. Between these points lies Deep Bay, or Back Bay, having soundings of 20 fathoms in it, about 1 or $1\frac{1}{2}$ miles off shore; but there is no ground, when the distance from it exceeds 4 or 5 miles, more particularly about Tanjong Batoo Pootie, where the coast is nearly steep to.

Pedir Point.

PEDIR POINT, in about lat. 5° 29′ N., lon. 96° 10′ E., bearing from Tanjong Batoo Pootie E.S.E., distant 5 or 6 leagues, may be known by some bushy trees on its extremity, by the Golden Mountain, which bears from it W. by S. $\frac{1}{2}$ S. nearly, and by the land trending from it to the S. S. Eastward. In sailing from Achen along this part of the coast, a ship should keep near it, as in most parts anchorage may be found if necessary, for there is seldom any hidden danger above half a mile from the shore; and as the bank is steep to, with westerly and variable currents outside, calms are more prevalent than in soundings, and much ground may be lost by getting out of anchorage.

The Road.

Pedir Point may be approached to 10 fathoms, within half a mile; the course is then S.S.E. and S.E. by S. to the road of Pedir, where the anchorage is in 10 fathoms, with the point bearing N.W., Golden Mount W. $\frac{1}{2}$ N., and the entrance of the river, which is not conspicuous, S. $\frac{1}{2}$ W. to S. S.W., distant $1\frac{1}{2}$ or 2 miles: small ships may anchor in 7 fathoms about a mile off shore. Boats can enter the river at low water neap tides, but not until a quarter flood on the springs, a considerable surf being then on the bar. Pedir exports great quantities of beetle-nut cultivated here, and pepper brought from places of less consequence, which makes the trade of the whole coast take its name after this port. Pedir village is in lat. 5° 22′ N., and 26 miles East of the Golden Mountain, or in lon. 96° 15′ E.

Pedir Village.

Rajah Point.

RAJAH POINT bears from Pedir Point E. by S. $\frac{1}{2}$ S., distant about 12 leagues,

and in working between them you may stand in 12 or 14 fathoms, although, in some places, these depths are not above half a mile from the shore; when near Rajah Point, do not go under 20 fathoms, for contiguous to it there is *said* to be foul ground. There are several villages along this part of the coast; Burrong has now become the chief place on the coast for trade, and is much frequented by Chulia vessels from the Coromandel coast; it is in lat. 5° 20′ N., about 5 or 6 miles E. S. Eastward from Pedir, near the entrance of a river, from whence the bushy tree on Pedir Point is just visible from the deck. Burrong is also called Gingham, but Gingham River stretches westerly from it towards Pedir. Ayerlaboo is an inconsiderable place, 3 miles eastward from Burrong; and Sawang, 4 or 5 miles farther, may be known by a grove of trees, which are very conspicuous. Merdoo, about 4 leagues eastward of Sawang, may be known by some huts and straggling trees, and by a *large tree* on the point of the river, the entrance of which is not conspicuous; but a run of water resembling, when at a distance, a path in the valley, appears very plain in the rainy season. Sambelangan, about 2 leagues to the eastward of Merdoo, has a small fort on each side the river, and lies in a bight betwixt Merdoo Point and Rajah Point; ships may anchor at any of these places, the coast being bold and safe to approach; but, excepting Burrong and Sambelangan, these villages produce very few articles of trade. The anchorage at Sambelangan is in 12 to 15 fathoms, with Merdoo Point bearing W. by N., Rajah Point E. by N., distant off shore 1 or $1\frac{1}{2}$ miles. Coast and villages adjacent.

PASSANGAN POINT, bearing from Rajah Point E. by N. $\frac{1}{4}$ N., distant 6 leagues, is bluff, and may be known by a grove of coco-nut trees on its extremity, which is divided by the mouth of a river; the coast between these places is much indented, soundings do not extend off above 2 miles, and 8 or 9 miles eastward from Rajah Point, are very irregular; then a bank about 1 or 2 miles from the shore, with 10 fathoms on its edge, extends to Passangan. This bank shoals gradually to the shore, but half a mile beyond its verge there is no bottom at 50 or 60 fathoms. The point may be rounded within the distance of a mile with the land wind, for although the sea generally breaks upon the point, there is no ground at 30 fathoms about 2 cables' lengths outside the breakers. Passangan Point.

Passangan River falls into the bay to the eastward of the point, off which there is anchorage in 15 to 20 fathoms about half a mile from the shore, with the point bearing W. by N.

Elephant Mountain, in lon. 96° 50′ E., called also Friar's Hood, bearing S. W. $\frac{1}{2}$ S. when in one with Passangan Point, lies several leagues inland, and may easily be known by its abrupt and singular aspect; it will point out the approach to Passangan Point. Elephant Mountain.

ROCKY POINT, or GUM GUMA, may be known by a clump of trees at its extremity, somewhat higher than the rest, bears E. $\frac{1}{2}$ N. from Passangan River, distant about $3\frac{1}{2}$ or 4 leagues, and the soundings between them do not extend far out: in working here, stand in to 20 fathoms, but not under this depth off Rocky Point, as a reef projects from it. Rocky Point and contiguous coast.

TOOLOO-SAMWOI POINT, in lat. 5° 13′ N., about lon. 97° 14′ E., is 2 or 3 leagues E. S. Eastward of Rocky Point; the coast between them is very steep, having 25 fathoms about half a mile off, from which depth the water shoals quickly towards Tooloo-Samwoi Point.

the shore. On the extremity of the former point there is a square clump of trees, which makes it resemble an island when first seen.

Tooloo-Samwoi.

Caution.

TOOLOO-SAMWOI, in lat. 5° 10′ N., at the bottom of the bay to the S. Eastward of the point, is a place of some trade, and there is a fort and village near the mouth of the river. Ships which stop here to trade, or to procure water and refreshments, must be constantly guarded against the perfidy of the natives, and those of the other towns along this coast, who have been too successful, at various times, in surprising vessels and massacring their crews.

If bound into the road from the westward, round the point at any convenient distance, keeping the western side of the bay close aboard, if the wind be westerly; and anchor in 10 or 11 fathoms with the point N. by W. ½ W., Passier Grove E. by S. ½ S., and the High Table Mountain to the S.W. of Diamond Point S. E. by S., about half a mile from the western shore.

Shoal.

Betwixt Tooloo-Samwoi and Diamond Point, lies the river and village of Courtay, or Curtoy, and the whole of this part of the coast is clear of danger, except when Diamond Point is approached; a shoal, with 1½ and 2 fathoms on it, bears about W. ½ S. from the point, and North from the village Courtay, distant 2 or 3 miles from the shore. Close to this shoal on the outside there are 11 fathoms, and between it and the shore, 5, 4, and 3 fathoms.

Sumatra coast, from Diamond Point to the Arroas.

Tides.

THE SUMATRA COAST, from Diamond Point to the Arroa Island, is low and woody, fronting the sea, having along it several rivers, towns, and villages, which are only frequented by coasting proas or other small vessels.

The flood sets along this coast to the S. E., and the ebb to the N. W., varying a point or two, according to the direction of the coast: the ebb is generally stronger and of longer duration than the flood, but seldom runs above 1½ miles per hour, when the distance from the shore is considerable. The soundings along the coast are somewhat irregular, with foul ground in many places under 30 fathoms; but outside this depth the bottom consists of mud, or mud and sand, and it is of the same quality in the middle of the strait.

Passage along the coast.

Although the Malay side of the strait is preferable to the other, yet if a ship happen to be off Diamond Point with a steady N.W. gale, she may steer along the Sumatra coast at a moderate distance, towards Pulo Varela and the Arroas. This route is shorter than the common one along the Malay side; and the best depths to preserve, after passing Diamond Point, are from 30 to 36 fathoms, not borrowing under 20 or 25 fathoms towards the Sumatra shore, in working; but she may stand out into the middle of the strait to any distance required; and the coast may be approached occasionally, in some places, to 12 or 14 fathoms, if she intend to anchor off any of the rivers.

NORTH-EAST COAST OF SUMATRA, FROM DIAMOND POINT TO BREWERS STRAIT AND SIAK RIVER.*

Diamond Point.

DIAMOND POINT, called also JAMBIE AYER, or TANJONG GOERE, in

* Chiefly from the survey, by Lieutenants Rose and Moresby, of the Indian Navy, in the Company's cruizer Nautilus, in 1822.

lat. 5° 17′ N., lon. 97° 33′ E.,* forming the eastern extremity of the coast of Pedir, is low and woody, but the trees on it being of unequal height, and higher than those of the contiguous land, make the point appear like a low sloping island, when viewed at a considerable distance, although the ground is very little elevated above the sea at high water spring tides. A reef extends from the point about a mile in a northerly direction, having 3 fathoms sand on its outer edge, and shoaling gradually to the point; a ship should come no nearer the latter than 2 miles, nor under 12 fathoms in passing it and the shoal to the westward; for the water shoals quickly under this depth to the westward of the point. This place is frequented in the fair season by fishermen from the coast of Pedir. Inland, to the S. S. Westward, there is a high Table Mountain, visible from the offing in clear weather.

Although the tides along the Pedir coast are weak, and only perceptible near the shore, there being a current usually setting to the westward in the offing during the South-west monsoon, yet they begin to run strong at Diamond Point; the flood here sets to the south-eastward, and the ebb to the north-westward, about 2 miles per hour, with a rise and fall of 9 or 10 feet on the springs. At the western part of the coast of Pedir, it is high water about 10½ hours, on full and change of moon; and at 12 hours off Diamond Point. The soundings are not very regular in the offing, the depths being from 20 to 35 or 40 fathoms, about 3 miles, to 5 or 6 leagues from the point; and soundings extend from hence across to Pulo Pera, and from the latter to the Ladda Islands, and to Penang. A little outside of Pulo Pera there are no soundings. Tides. Soundings.

PRAUHILAH POINT, in lat. 4° 53′ N., lon. 97° 55′ E., by chronometer, bearing from Diamond Point nearly S. E. about 10 or 11 leagues, has a reef projecting North and N. N.W., from it about 3 miles, near which the soundings are very irregular, although between it and Diamond Point they are regular at a small distance from the shore: there are 4½ fathoms, mud, about 3½ miles from Prauhilah Point. On the north side of the point is the entrance into the river, which is almost dry at low water; but inside of it there are 2 fathoms for several miles up, with a small fishing village at a considerable distance from the entrance. Prauhilah Point.

LANKSA BAY, about 7 leagues S. E. by S. from Prauhilah Point, formed by Oojong Byan to the N.W. and Oojong Quala Lanksa to the S. E., is about 4 miles wide, containing numerous shoals, with narrow channels leading into the different rivers which fall into this bay. Near Oojong Quala Lanksa lies Pulo Telaggy Tujou, a small island about a mile in extent, having a channel about 300 yards wide, with 6 and 7 fathoms water, between it and Oojong Quala Lanksa: this island cannot be distinguished from the main land, in coming from the northward. The entrance into Lanksa River bears from it about South, and there is a safe but narrow channel on either side the island; the best channel, however, is from the N. E. between the island and Oojong Quala Lanksa, having 2½ fathoms the least water. In the entrance of the river there are two small islands, and the town is said to be at a considerable distance inside, containing a number of inhabitants, who cultivate rice, pepper, and rattans. There are only 3 fathoms mud, about 6 miles distant from the bottom of the bay, and the reefs extend 3½ or 4 miles from the nearest land. Lanksa Bay.

About 5 leagues S. E. of Lanksa Bay is Oojong Tannang, or Tamiang, with Pulo

* It has been placed by some navigators 12 or 14 miles more to the eastward; but the survey of this part of the coast of Sumatra, by Lieutenants Rose and Moresby, places it in the longitude given above.

Roquit mid-way between them ; the coast in this interval is safe to approach, having from 15 to 20 fathoms about 2 miles off shore, excepting at Pulo Roquit, and at Oojong Tannang, where there are reefs of breakers, which project out about a mile.

Quala Bubon. QUALA* BUBON, in lat. 4° 1′ N., lon. 98° 29′ E., lies at the S. E. extremity of a deep bay, formed between it and Oojong Tannang ; the bay is not easily perceived from the offing, as Pulo Tampelee and Pulo Lampatuah, two large islands fronting the bay, appear, unless close in shore, as part of the main land. Between these islands, there is said to be a safe channel for small vessels, that leads to Kaya-la-pun River. From the mouth of Quala Bubon a bank extends about 4 miles to the northward and north-eastward, having dry patches on it, with breakers in some places. About $4\frac{1}{2}$ miles off the entrance of the river, the depth is 3 fathoms, mud, and the tide rises and falls about 9 feet on the springs, high water at 3 hours on full and change of moon. (Tides.)

About 4 leagues S. Eastward of Quala Bubon there is an island, close to Oojong Lankat-tuah, which is safe to approach, and which forms the northern extreme of the concavity of the land, where Delhi River is situated.

Delhi River. DELHI RIVER, in lat. 3° 46′ N., lon. 98° 42′ E., is fronted by an extensive mud flat to the distance of 5 miles in some places, upon which the depths decrease regularly. The mouth of the river is about a quarter of a mile wide, having only 4 feet at high water on some parts, but inside it deepens to 2 fathoms ; about 3 miles from the entrance, the river has a sharp turn to the S. E. and becomes narrow, and after forming three very short turnings, having only 3 or 4 feet water in some of them, reaches the town of Delhi, where it is only 40 yards wide, and a fresh stream descending always at this place. The town consists of scattered huts, and contains about 500 inhabitants, who cultivate some rice and pepper.

Bulu China River. Bulu China River entrance is about a quarter of a mile to the northward of Delhi River, and between them a sand-bank, dry at low water, projects about a mile from the shore, having close to it $1\frac{1}{2}$, 2, and 3 fathoms. The entrance of Bulu China River is about 300 yards wide, and much deeper than Delhi River, having one fathom on the bar at low water, with $3\frac{1}{2}$ and 4 fathoms inside ; about $3\frac{1}{2}$ miles up, this river branches off to the westward, and it has a communication with Delhi by a channel to the south-eastward, in which there are $1\frac{1}{2}$ and 2 fathoms water. Here, the rise and fall of tide is from 8 to 9 feet, high water at 4 hours on full and change of moon. (Tides.)

Tanjong Mattie. From Delhi to Tanjong Mattie, which forms the northern part of Battoo Barra Bay, the coast extends about S. E. by E., having regular soundings to $4\frac{1}{2}$ fathoms, within $1\frac{1}{2}$ miles of the low sandy beach that lines this part of the coast. Off Tanjong Mattie to the northward, the depth increases to 12 and 14 fathoms, and shoals suddenly to 5, 3, and 2 fathoms, on a sandy spit which projects about a mile from that point ; and about 5 miles to the eastward of it, and the same distance to the northward of Battoo Barra, there is an extensive and dangerous sand-bank, having only 1 and $1\frac{1}{2}$ fathoms, with a safe channel betwixt it and the main land.

Battoo Barra. BATTOO BARRA RIVER, in lat. 3° 13′ N., lon. 99° 37′ E., and the coast for some miles eastward, is fronted by an extensive mud flat, having regular soundings, and projecting out to within 3 miles of the South Brother. The river is about 300 yards wide, with regular soundings to the dry banks at its mouth, where a little way inside it

* Quala signifies River.

divides into two branches, one to the eastward and the other to the westward. About a mile up the western branch, is the town, where the chief rajah resides; it is apparently well inhabited. On the banks of the eastern branch stands another town, with a number of inhabitants; and there are said to be other towns farther up the river, all subject to the Rajah of Battoo Barra, who is tributary to the Rajah of Siak. The people cultivate rice and rattans, and manufacture raw silk from China, small quantities of a kind of tartan, which is much esteemed by the neighbouring Malays. Opium, fire-arms, and gunpowder, appear to be in great request. Elephants abound inland, but the natives are ignorant of the method of catching them: horses are also plentiful, but are neglected on account of the heavy duty charged by the rajahs. European vessels have discontinued visiting this place for many years, owing to the perfidious conduct of the Malays, who *formerly* cut off several vessels that touched here to trade. Nevertheless, the people of Battoo Barra appear more industrious, and better inclined to trade, than is usual with the other inhabitants of this coast; and they carry in their own proas, to Penang and Malacca, the rattans, pepper, or other articles produced here. Goats and poultry are plentiful, at reasonable prices. Trade and supplies.

ASSARHAN RIVER, in lat. 3° 2′ N., lon. 99° 52′ E., has a mud flat, extending from its entrance about 7 miles to N. Eastward, upon which the soundings regularly decrease. From hence to Reccan River, care is required not to approach too near the coast, as several mud flats extend to a considerable distance, upon the verge of which the water shoals suddenly: particularly about 5 or 6 leagues to the S. E. of Assarhan River, fronting the Bay of Lidang and its contiguous rivers, where the flat extends 3 and 4 leagues from the shore at the bottom of that bay. Assarhan River.

RECCAN, or RAKAN RIVER, has at the entrance two islands, Pulo Lalang Besar, in lat. 2° 10′ N., lon. 100° 37′ E., and Pulo Lalang Kecheel; the former is the largest, from which the other bears S. by E. ½ E. about 2¾ miles, and there is a shoal channel between them, leading into the river: they are low and woody, and not discernible above 10 miles. Having passed between these islands, and being a little to the eastward of them, the entrance into the river bears S. E. ¾ S., and extends in this direction about 30 miles; then a small and shoal bank projects to the westward, called Banka: but the main branch takes a S. E. direction, and is called Tanah Putie River, having a town of the same name at the mouth of this branch, which is here about 1½ miles wide, and is said to take its rise from the mountains. It is shoal and dangerous, from the rapidity of the tides; but several large and populous villages are said to stand on its banks, subject to the Rajah of Siak. Reccan River.

The greatest breadth of the mouth of Reccan River is about 15 miles, decreasing about 8 or 9 miles up to 4 miles, afterwards to 2 miles, and then continuing this breadth till it forms the two branches mentioned above. It is almost dry at low water spring tides, and is rendered exceedingly dangerous by their excessive rapidity of 7 miles per hour, producing a bore on the springs, and having a rise and fall of 30 feet.* Tide and bore.

At the mouth of the river it is high water at 6 hours on full and change of moon, the rise and fall of tide about 26 feet, and here the velocity of the stream is about 5½ miles per hour, but it becomes much greater a few miles up.

* The Nautilus anchored about 17 miles up the river in 6¼ fathoms, and while the ebb tide was running about 2 miles per hour, the bore was seen approaching in three large waves, and the instant it touched the vessel, then lying aground in 4 feet water, it was passed in less than a minute, and increased the depth to 2¼ fathoms.

On the bank of the river, the Nautilus found a straggling village, from whence the inhabitants came off in great numbers, and entreated to be admitted on board, under pretence of friendship, which was refused, excepting to a few of them: they afterwards, without the least provocation, endeavoured to cut off one of the boats, which had got adrift by the excessive rapidity of the tide.

Oojong Perbabean and adjacent coast.

From Reccan River the land of the eastern bank projects to the N.W., forming the headland called Oojong Perbabean, in lat. 2° 15′ N., from which a mud flat extends to N.W. and N. N.W. about 11 and 12 miles, and upon this flat the soundings decrease regularly. When clear to the eastward of this bank, and having Oojong Perbabean bearing S.W. and Parcelar Hill N. E., you enter upon the most dangerous part of this coast, its various sand-banks extending from it over to the south sands, with gaps and narrow channels of mud soundings between them.

As the soundings afford no guide in approaching these banks, the depth decreasing suddenly upon them, it is necessary for a vessel intending to pass between them to have a boat a-head sounding, and a good look-out kept from the fore-yard, for the shoal banks are plainly seen when the sky is clear in the daytime.

Pulo Roupat.

PULO ROUPAT (north point, called Oojong Bantan, in lat. 2° 6′ N., lon. 101° 42′ E.), is bold to approach, having 30 fathoms within 1½ miles of the shore. The eastern side of this island is bold until the entrance of Brewers Strait is approached, where a mud bank extends out from the shore of Pulo Roupat about 5 miles. Between the north point of Pulo Roupat and Oojong Perbabean, the coast forms a deep bight, which is fronted by an extensive sand-bank; this bank, together with those in the offing, mentioned above, render this part of the Sumatra side of the strait very intricate and dangerous.

Brewers Strait.

BREWERS STRAIT, or SALAT PANJANG, the north entrance, is formed between the main land of Sumatra and Pulo Bucalisse, Tanjong Jattee, the north end of the latter, being in lat. 1° 36′ N., lon. 102° 0′ E. The northern part of this strait is about 5 miles wide, with soundings of 8 to 15 and 20 fathoms, mud; and about 8 miles from the entrance, on the western shore, is the town of Bookit Battoo, upon the banks of a very narrow river of the same name; the town is not easily perceived, the houses being scattered among, and hid by the trees; but it may be known by a tree, formed like an umbrella, near the entrance of the river.*

At Oojong Ballai, a point of Sumatra about 3 leagues to the S. E. of Bookit Battoo River, the strait becomes contracted to 3 or 4 miles in breadth; and opposite to the point is the entrance to the narrow strait called Salat Padang, affording a safe passage for boats; it is formed between Pulo Bucalisse and Pulo Padang. From Oojong Ballai, Brewers Strait turns from a S. E. to a South direction, till opposite the mouth of the Siak River.

From the entrance of Siak River, Brewers Strait extends S. S. E. to the western end of Pulo Rantow, where it contracts to one mile in breadth, with regular mud soundings from 8 to 10 fathoms. Between Pulo Rantow and Pulo Padang is formed a channel, leading to the sea, called Salat Ringit by the natives, and said to be used only by boats. From the western end of Pulo Rantow the strait takes an easterly

* Captain M. Quin, of H. M. S. Raleigh, who visited Bookit Battoo in 1837, describes it as being built on piles, and as the principal station for the war proas of the Rajah of Siak; seventeen of these vessels were anchored in the river ready for sea, at the time of Captain Quin's visit. The Raleigh anchored abreast of the river in 12¼ fathoms, Bookit Battoo bearing W.S.W. and Tanjong Jattee N. by W. ½ W.

direction about 20 miles, with depths from 10 to 15 fathoms, till a small island in mid-straits is approached, on each side of which the passage is practicable, taking care to avoid the stream of the island, as a mud flat extends from it to the westward about 2½ miles in the middle of the strait. From hence, the direction to the strait is to the S. Eastward, and after passing three small islands on the left hand, the southern entrance opens, off which there are a great number of islands.

The safest channel out appears to be between Pantow Point and Pulo Senappoo, having regular but shoal soundings of only one fathom at low water in some parts.

SIAK RIVER (the entrance), in lat. 1° 13′ N., lon. 102° 10′ E., on the western side of Brewers Strait, is about three-quarters of a mile wide, having a sandy spit, nearly dry at low water, extending almost across, but leaving a safe, although very narrow channel, close to Oojong Liang, the eastern entrance point; the river becomes narrow with deep soundings inside, and is said to have its source in the mountains. The town of Siak stands at a considerable distance from the mouth of the river; the Rajah of Siak is very powerful, his authority extending to Lankat, a town situated on the banks of Bubon River. The Nautilus anchored in 6 fathoms, mud, within a quarter of a mile of the mouth of Siak River, and found the time of high water at full and change of moon to be 9 hours, rise and fall of tide about 12 feet, and the velocity 2¼ miles per hour. Siak River. Tides.

CAMPOU RIVER, in lat. 0° 35′ N., lon. 103° 8′ E., is fronted by an extensive mud flat, almost dry at low water; and it is little frequented, on account of the rapidity of the tides, occasioning a bore at times, similar to that of Reccan River, which it resembles in several respects. In approaching the southern entrance of Brewers Strait, the tides are greatly influenced by this river, producing a strong eddy round some of the islands, so that while the tide is running to the southward on one side of an island, it may often be found running to the northward on the other side. The rise and fall of tide near the southern entrance of Brewers Strait is about 15 feet in some parts, with a velocity of about 3½ miles per hour, but much greater when near the entrance of Campou River. Campou River. Tides.

The three islands, Pulo Bucalisse, Pulo Padang, and Pulo Rantow, which form Brewers Strait, and also Pulo Panjore, ought not to be approached, but with great caution, at their eastern sides, as they are fronted by an extensive mud flat, with dangerous sand-banks, in some places, having only 1½ fathoms water on them. These form what is usually called the Sumatra Bank, or Third Bank in Malacca Strait, to the N. Westward of the Carimons. Islands forming Brewers Strait, and shoals off them.

ISLANDS AND BANKS.

PULO VARELA, in lat. 3° 47′ N., lon. 99° 33′ E., bearing from Diamond Point S. 49° E., distant 140 miles, and about 6 leagues from the Sumatra shore, is high, and may be seen at 8 leagues' distance: off the N. W. point lies an islet or rock, and another off the south end. At its south end, in a little cove, water may be procured from a small run, but not always in sufficient quantity; and there is anchorage at the S. E. part of the island in 12 to 18 fathoms, about a mile off. Plenty of firewood may be procured, and good pine spars may be cut here. Boats landing here ought to be guarded against the perfidy of the Battoo-barra people, from the adjacent coast, who frequently lurk about it with a few proas, in search of plunder, or to dry their nets; Pulo Varela.

and they have more than once massacred, or carried into captivity, the crews of boats, which had landed here to procure wood and water.*

The depths of water near the island on the inside are 18 to 24 fathoms, decreasing towards the Sumatra coast, but not always regularly, as several banks are known to exist here; of which the one next described is dangerous.

Varela Reef. VARELA REEF, bearing W. ¾ S. from the island, distant 5 or 5½ leagues, has sometimes breakers on its southern part, from whence a long spit, or bank of sand, extends to N. N. Westward. The American ship William, Captain Bodin, September 2nd, 1811, shoaled to 7 fathoms, hard sand, on this bank, and shortly after saw breakers bearing S. E. by E., which were brought to bear E. ¾ N., distant about 2 miles, when in one with Pulo Varela, the latter just visible from the deck, then in 12 fathoms water. Anchored afterwards in 7 fathoms on the bank, with the breakers bearing S. E. ½ E., and Pulo Varela E. by S.; after weighing, steered E. by S. 3 miles, then shoaled suddenly to 3¾ fathoms, steered W. N. W. and anchored in 6 fathoms, with Pulo Varela E. ¼ N., a high grove of trees on Sumatra, thought to be at the mouth of Delhi River, W. S. W. ½ S., and the breakers S. S. E. After weighing a second time, steered E. by S. about 2 miles, and shoaling again to 3 fathoms, wore to the W. N. W. and N. W., deepening very slowly till Pulo Varela bore East, then had 7 fathoms, and steered N. E., increasing the depth to 9, 10, 12, and 13 fathoms in a few casts of the lead.†

Banks thought not dangerous. There is a bank about 4 or 5 miles to the S.W. of Pulo Varela, on which the American ship William had 9 fathoms; and 10 miles to the W. S. Westward of the island, and 4 or 5 miles in a S. E. direction from Varela Reef, she had 9 fathoms on another bank: on a third bank, about 4 or 4½ leagues S. by W. from the same island, she had 9 and 8 fathoms, with soundings from 18 to 26 fathoms between them.

Another bank, bearing about N.W. by N. 3 leagues from Pulo Varela, is *said* to have only 2 fathoms on it, but 7 or 8 fathoms appear to be the least water that has been found in the position assigned to it. About 4 leagues to the N. Eastward of Pulo Varela, the depths are from 32 to 35 fathoms.

Two Brothers. THE TWO BROTHERS, bearing nearly N. N. E. and S. S. W. 4 or 5 miles from each other, are covered with wood, and much lower than Pulo Varela; the northernmost, called Pulo Pandan, is in lat. 3° 24′ N., about lon. 99° 49′ E., bearing from Pulo Varela S. S. E. ¾ E., distant 8½ or 9 leagues. The southernmost, called Salanama, is the larger; the soundings about 4 or 5 miles to the northward of Pulo Pandan are 26 and 27 fathoms; but to the N. W. and westward of it, at the distance of 4 to 8 or 9 miles, the American ship William had from 7 fathoms the least water, to 9 or 10 fathoms, sometimes sandy bottom, at other times soft mud.

Sailing Directions. From Diamond Point, having proceeded along the Sumatra side of the strait, you may pass on either side Pulo Varela, giving a berth to the reef, if you pass inside, then steer towards the Brothers, and pass to the northward of them, as the channel betwixt

* In 1788, the boat belonging to the ship Dadaloy, Captain Richardson, was cut off at this island, where she was sent to procure water.—Captain M. Quin, R.N., of H.M S. Raleigh, who visited Varela in 1837, states, that the people from Battoo-barra, who, with their families, resort to this island, " remain some three months in each year to catch turtle and preserve their eggs," and that " they also prepare dry fish-roes and fish for the markets of Penang, Malacca, and Singapore." (*Naut. Mag. for* 1838, p. 794.)

† The courses steered by the William, and the bearings of the land which are given, are irreconcilable.—Ed.

the South Brother and Battoo Barra Flat is not frequented, being only 3 or 4 miles wide; besides the passage outside is more direct towards the channel formed between the Arroas and North Sand. Long Arroa bears about S. E. by E. ¼ E., 19 leagues from the northernmost Brother, and after passing the latter, steer more easterly, to make the Arroas, bearing well to the southward, to get soundings on the western end of the North Sands; then proceed through the channel between the North and South Sands, towards Parcelar Hill.

Sumatra coast and channels.

From Diamond Point to Siak River, the coast of Sumatra has been particularly described; it is mostly all low land, covered with trees, and intersected by several rivers; shoal banks stretch out a great way from the shore in some places. The channel along this coast, to the southward of the Arroas and South Sands, has been found, by the late examination of the Nautilus, to be intricate and unsafe: the land being low and level, destitute of proper marks, no ship ought to adopt this channel; and a boat must be kept sounding a-head, if a ship be obliged to push through it in a case of emergency.

The East and West Channel, formed between the North and South Sands, from the Arroas to Parcelar Hill, and then betwixt the Malay coast and South Sands, is frequented by ships of every description; and it is far preferable to the passage along the Sumatra side of the strait. It has been said, that 7 leagues W. by N. from the Long Arroa there is a bank even with the water's edge, but most probably no such bank exists.

MALAY COAST, FROM JUNKSEYLON TO PENANG.

Malay coast and islands.

THE MALAY COAST, between Junkseylon and Penang, now occupied by the Siamese, is fronted by many islands; and inside most of the groups, and between them, there are passages for small vessels, but large ships generally sail outside.

A small vessel proceeding from Junkseylon during the N. E. monsoon may pass on either side the outer groups to the S. E. of Pulo Panjang, as most convenient: the first of these, called the Vogels, is a group of small islands about 6 leagues from Panjang, with 14 and 16 fathoms water inside, and 25 to 30 fathoms outside of them.

The Pilgrims is the next group, 4 or 5 leagues farther to the S. Eastward, composed of very small islands, and bearing nearly East, about 9 leagues from the Brothers off Junkseylon. Some persons call the largest island of this group Slipper Island, but Sapata, or Slipper Island, seems to belong to a group of two or three islands, 4 or 5 leagues farther to the S. Eastward. The latter group is called Pulo Allang by the Malays, but navigators give to the largest the various names of Pulo Mohea, Tupia, or Slipper Island. Betwixt these islands and many others which lie contiguous to the coast, the depths are from 20 to 12 fathoms, and there is good anchorage amongst them: some articles of refreshment may be got at Pulo Telibon, which lies close to the shore in lat. 7° 14′ N., where vessels might anchor in 4 or 5 fathoms, off its western side; but the harbour is narrow, and requires care in entering. From Telibon, a chain of high rocky islands stretches along the coast to the north end of Pulo Trotto, with a good passage of 8, 9, and 10 fathoms water on the outside; and if bound to Queda, a small vessel may pass inside the large islands of Trotto, Lancava, and Ladda, between them and the main, in various soundings, from 4 or 5 fathoms near the coast, to 8 and 10 fathoms nearest the islands; for the shore opposite is lined by a shoal mud bank, extending a great way over towards the islands. From thence, she may haul into 5 or 6 fathoms water near the coast, and anchor in 5½ or 6 fathoms, with Queda River en-

trance E. by N. Northerly, Elephant Mount N. E. ¼ N., Boonting Islands about S. S. E., and the Rocky Islands, called Payers, or Peers, about 4 or 5 leagues to the westward, bearing W. by S. Southerly. There is very little trade here, since the establishment of the English at Pulo Penang, more particularly since it became a conquest to the Siamese. Queda Town, in lat. 6° 6′ N., stands on both sides the entrance of the river, which, although fronted by a mud flat, has sufficient depth of water within for sloops and brigs to anchor, off the Rajah's residence, about 10 or 12 miles above the town. Tides. The tide rises about 5 or 6 feet, and flows to nearly 12 hours at full and change of moon. Elephant Mount is near the shore, in lat. 6° 10′ N.; and in lat. 6° 21′ N. lies Parlis River, off which the coasting vessels anchor in 3 fathoms, to the S.W. of four islands that lie near the main, and with a Haycock Mount bearing to the N. N. Eastward, as the mud bank lining the coast is here very flat. There are several rivers between Junkseylon and Queda; Phoonga, to the S. S. Eastward of Junkseylon, is a river of some importance, where the Siamese build proas and boats; the town is a considerable way up the river. Trang River, inside of Telibon, is also navigable by proas, or small vessels. Between Telibon and Pappan, there are some dangerous rocks covered at high water.

Little Passage. LITTLE PASSAGE is preferable to that last mentioned, inside of the principal islands; and if you intend to proceed by it, after rounding the Brothers at 3 or 4 miles' distance, steer East and E. by S. for Pulo Mohea, which will carry you outside of the Pilgrims, and about 8 or 9 miles to the eastward of the Guilder Rocks, if there be no oblique current.

Guilder Rocks. GUILDER, or SANGALD ROCKS, in lat. 7° 10′ N., is a reef elevated about 2 or 3 feet above water, having 30 and 33 fathoms to the N. Eastward, and from 36 to 40 fathoms water close to it on the outside; it bears about South 5 leagues from the Pilgrims, and the same distance W. by S. ½ S. from Pulo Mohea, requiring great care if soundings are got near it in the night, more particularly as it is said to be visible only in the N. E. monsoon, or dry season.

Having approached Pulo Mohea, pass it on the west side at 4 or 5 miles' distance, by which the Guilder Rocks will have a berth of 3 leagues to the westward: from Pulo Mohea steer about S. E. by E. for Edam, which is the easternmost of three small islands, of middling height, situated nearly mid-way between Pulo Bouton and Trotto; in Other dangers. passing betwixt Trotto and Edam, borrow on the latter, to avoid the Black Rock that lies 4 or 5 miles off the N.W. side of Trotto, nearly even with the surface at low water. There is also a dangerous reef fronting the S. E. end of Bouton, on which the sea breaks, having a passage with 16 fathoms water between it and Edam Islands, which may be chosen if necessary.

From Edam, steer S. Easterly for the S.W. end of the Laddas, which pass in 16 fathoms if the wind be Northerly or N. Easterly; then steer about E. by S. for the Peers, and pass to the westward of them, giving a berth of 3 miles to Rotta, the westernmost islet. Having passed the Peers, steer E. S. Easterly for the Boonting Islands, and if bound to Pulo Penang, pass them on the outside at a moderate distance.

The passage between Trotto and the Laddas is also safe, with depths from 14 to 9 and 8 fathoms, and along the west side of the former the depths are 7 and 6 fathoms near the shore: about a third of the passage over from the S. E. point of Trotto lies a Pyramidal Rock, with 15 fathoms close to it, and near the point there is a smaller

rock and an islet. Having passed these, borrow afterwards near the Ladda shore, to give a berth to the shoal mud bank that stretches from the main land far over towards the islands.

THE LANCAVA GROUP consists of three large islands, and many smaller ones bordering them to the eastward and southward; they extend nearly N.W. and S.E. from the South part of Pulo Ladda,* in lat. 6° 8′ N., to the north end of Trotto, in lat. 6° 49′ N. They are high bold islands, particularly Lancava, the centre one, which has on it a high peaked hill: there is also upon Pulo Ladda, to the S. Eastward, a peaked hill resembling the former, in about lat. 6° 21′ N., lon. 99° 50′ E., which is generally called Ladda Peak. Lancava Islands.

The Laddas, which form the South and East parts of the group, are high rugged islands, of barren aspect; betwixt the two largest islands, at their southern extremity, there is a safe harbour, called Bass Harbour by Captain Forrest. The channel leading to it from the north-westward is along the S.W. end of Lancava, where the depths are from 7 to 12 fathoms; and there are from 4 or 5 to 9 and 10 fathoms water in the channel betwixt the islands leading into the harbour from the southward. The south part of Lancava, about 3 or 4 miles to the northward of Bass Harbour, is partly cleared, and inhabited by Malays and Chinese; but there being no trade at these islands, the harbour is not frequented. The Laddas.

Trotto, the northernmost large island of the group, has a cove or small harbour at its N.E. end; and the channel that separates Lancava from this island contains soundings from 8 to 14 fathoms, as mentioned above. About 3 or 4 leagues outside these islands, the depths are from 24 to 30 fathoms, and close to them from 8 to 12 or 16 fathoms, but not very regular. There are tides among and inside of them, but currents prevail frequently in the offing, setting mostly to the northward in the S.W. monsoon, and to the southward during the N. E. monsoon.

PULO BOUTON is formed of two large and high islands, very near each other, with some contiguous islets, and a reef of rocks off their S. E. extremity. The large islands are both high, and the easternmost is formed of a regular sloping pyramidal mountain, generally called Bouton Dome, which may be seen about 17 or 18 leagues. By mean of observations, taken when passing at various times, I made the Dome in lat. 6° 33′ N., lon. 99° 20½′ E., or 19½† miles to the eastward of the meridian of Pulo Pera; and the body of the two islands appearing as one when seen from the westward, in lat. 6° 34′ N. Pulo Bouton.

This group is farther from the coast than any of the other islands which front the eastern side of the strait; the depths close to Pulo Bouton are from 17 to 26 fathoms; 3 or 4 leagues outside of it from 30 to 35 fathoms; and mid-way between it and Pulo Pera, generally from 40 to 50 fathoms.

* Captain Forrest calls the large central island Pulo Ladda, which *generally* bears the name Lancava; and to the easternmost large island, *commonly* called Pulo Ladda, he gives the name of Lancaway. Strangers landing on any of these islands, ought to be cautious if they penetrate inland, for the snakes are here very large. When the Princess Royal's boat landed on Trotto, the crew killed a snake 22 feet in length, the skin of which I afterwards saw at Canton. These islands are a rendezvous for pirates, who are on the look-out to attack trading proas or small coasting vessels; they have sometimes been known to lurk about the entrance of Penang Harbour.

† Captain Heywood made it in lon. 99° 20′ E., by lunar observations and chronometers.

Pulo Pera.

PULO PERA, in lat. 5° 42′ N., lon. 99° 0′ E.,* is a high, round, barren rock, lying nearly mid-way between Diamond Point and the coast of Queda, and may be discerned 6 or 7 leagues from a ship's deck. At leaving the strait, a departure is sometimes taken from this island, and when the weather is cloudy, during the S.W. monsoon, it is not unfrequently the first land seen after running into the entrance of the strait; for Pulo Rondo and the south end of the Great Nicobar are not always discerned in passing.

Pera being steep to, with soundings from 40 to 50 fathoms very near it all round, should be avoided, in the South-west monsoon particularly; for then calms and faint airs are likely to prevail in its neighbourhood, during which ships have been carried by the currents towards it, and were obliged to anchor in deep water to prevent being driven against the steep rock. The soundings, to the distance of 5 or 6 miles from it in all directions, are from 40 to 60 fathoms; but 6 or 7 leagues to the westward of it there are none to be obtained with 60 or 70 fathoms of line.

Penang, or Prince of Wales Island.

PULO PENANG, called also PRINCE OF WALES ISLAND, bears from Pulo Pera E. by S., distant 25 leagues. The soundings decrease regularly from 45 or 50 fathoms near the latter to 30 and 25 fathoms within 5 or 6 leagues of the former. Penang extends from lat. 5° 15′ to 5° 28′ N., being nearly 5 leagues in length and 7 or 8 miles in breadth; the west coast is slightly concave, with a space of woody low land fronting the sea. There are two small islands near the S.W. point, the northernmost of which is bold to approach, having from 5 to 7 fathoms very near it: opposite to this islet, under a point of the principal island, water may be procured.

Pulo Jerajah, lying about 5 miles S. by W. of the fort at George Town, is about 2 miles in extent N.N.E. and S.S.W., and is a high bold island, rising in a pyramidal form; betwixt it and the western shore are 5 and 6 fathoms water in the small channel, continued from the inside of the Long Sand. The east side of Pulo Jerajah is bold, steep to approach, and forms the west side of the proper channel to the South of the Long Sand: farther southward, the S.E. end of Penang, and Pulo Ramio off it, bound the west side of the channel at its southern entrance. The S.E. point of Penang and Pulo Ramio are both safe to approach.

The N.W. end of the island is high uneven land, and excepting the south part, and the eastern side, where the town is built, and where there is a considerable tract of cultivated low land contiguous to the sea, the rest of the island is high and covered with trees. When viewed at a great distance from the offing, it has a regular oblong appearance, and is discernible about 20 leagues in clear weather.

About $5\frac{1}{4}$ miles West from the fort flagstaff, stands the mountain on which signals are displayed for ships approaching the island. By means of trigonometrical and barometrical admeasurement, I made it 2,170 feet,† perpendicular height, above the

* From the S. part of Junkseylon, I measured 0° $38\frac{1}{2}$′ E. by chron. to Pulo Pera, making it in 98° 58′

From Malacca	3 $12\frac{1}{4}$	W.	do.	do.	... ...	99 $2\frac{3}{4}$	Mean. Lon. 98° $58\frac{1}{2}$′ E.
From the South end of Nicobar ...	5 $1\frac{1}{2}$	E.	do.	do.	... ...	98 59	
From Golden Mount	3 12	E.	do.	do.	... ...	98 $59\frac{1}{2}$	
From Malacca, Captain Macintosh ...	3 15	W.	do.	do.	... ...	99 0	
From Madras, Captain P. Heywood ...	18 39	E.	do.	do.	... ...	98 59	

Other observations place Pulo Pera about 2 or $2\frac{1}{2}$ miles farther East.

† By Lieut. Woore's survey, the mountain called Bell Retiro, or Government Hill, which is placed $4\frac{1}{2}$ miles West of the fort, is 2,550 feet above the level of the sea; and West Hill, lying a mile farther West, is 2,713 feet.

level of the sea; and at a small distance from it, an adjoining summit appeared to be about 60 or 80 feet higher than the signal mountain.

Fort Cornwallis is built on the N. E. point of the island, close to the town, which is called George Town by the Europeans, or Tanjang Panaique by the Malays. The principal exports are pepper, beetle-nut, rattans, tin, and some gold, brought by the Malay proas, from the main, from Sumatra, Java, and other islands to the eastward, and for which they receive opium, piece-goods, arrack, dollars, &c. Water and fire-wood may be procured at moderate prices; also bullocks and poultry which are brought from the coasts of Perah and Queda, but they sell high, and are scarce when the harbour abounds with ships. The trade of Junkseylon, Queda, Salangore, and other Malay ports, was formerly concentrated here, very little business being done at any of those places: most of the trade, however, has now passed to Singapore. The Fort.

The flagstaff of the fort, by good observations, I made in lat. 5° 24½′ N.,* lon. 100° 21′ E., by mean of lunar observations, and 2° 1½′ E. from the south end of Junkseylon by chronometers.

The harbour is nearly 2 miles in breadth, from the Fort Point to the main, with soundings of 12 to 14 fathoms in the middle, 6 and 7 fathoms near the Malay shore, and 9 or 10 fathoms near the Fort Point, which is nearly steep to. The best berth to moor in a large ship is about a quarter of a mile to the southward of the point, in 9 or 10 fathoms, and closer to the town in small vessels; as the tides are more regular here than abreast the point, where ships are liable to take turns in their cables in tending.

High water on the shore about 2¼ hours, on full and change of moon, but the flood runs to the southward until 3 hours, in the middle of the harbour; velocity of the tides from 2 to 3 knots during the springs, and the perpendicular rise from 7 to 9 feet. Tides.

The Island of Penang was presented by the King of Queda to Captain F. Light, and taken possession of by him in 1786, for the East-India Company; the Company have also obtained a grant of a considerable tract of the main land fronting the island, which is all low near the sea, except a small hill a little inland, contiguous to Praya River.

To sail into the harbour, all ships from the northward approach it by the North, or Great Channel, which is preferable at all times for large ships, because the South Channel is dangerous to proceed through without a pilot; or unless the navigator is acquainted with it, and his vessel not large. Directions for sailing into the harbour.

If bound in with a westerly wind, steer for the north end of Penang, which is high, bold, and safe to approach; with the wind at N. E. or Northward, borrow towards the Ladda Islands and Peers, and after rounding them at 2 or 3 leagues' distance, steer between S. E. by E. and E. S. E. for the Boonting Islands. These are of moderate height, four in number, with an islet between them; and they extend along the Queda shore nearly North and South, about 4 or 5 leagues to the northward of the north end of Penang. Pulo Boonting, the northernmost and largest, lies opposite the High Land or Peak of Queda; the second is called Sesson; the third Pangel; the southernmost Bidan, which is in lat. 5° 45′ N., and to the E.S.E. of it is the River Marboo, having a bank of shoal water stretching from it close to Bidan: the deepest water inside this island is 4 and 5 fathoms, 6 and 7 fathoms inside the others; excepting Pulo Boonting, which has only 2 or 2½ fathoms inside of it, being nearest to the shore. Boonting Islands.

* Captain P. Heywood made it in lat. 5° 25′N., lon. 100° 21′E., by mean of lunar observations, and 19° 59′E. from Madras Flagstaff, by mean of chronometers in four different voyages. In the Admiralty chart from the survey of Lieut. Woore, R.N., the lon. is 100° 23′ E.; which is also adopted by Lieut. Raper.

These islands may be approached to 14 or 15 fathoms in the night, or to any distance thought proper in the day, there being no danger but what is visible. Having passed them, the course is about S. S. E., in order to keep mid-way betwixt the north part of Penang and the main, which is desirable on account of an extensive flat bank or bar which stretches from side to side, and on which the deepest water is about mid-channel, or rather nearest to the Malay shore. The least water on this bank is 4 fathoms at low water spring tides, very even soundings; yet it is unpleasant passing over it in a large ship at low water, if drawing upwards of 20 feet, particularly with much swell, but this seldom happens.

The N.E. point of the island is about 4 miles to the N.W. of the Fort Point, having at a small distance outside of it the rocky islet Pulo Teecoos, with some rocks around; when abreast this islet, the water deepens gradually towards the harbour. The bay formed betwixt the fort point and the N.E. point is occupied by a shoal mud flat, steep from 5 to 4, then 3 and 2 fathoms.

Steering towards the entrance of the harbour in daylight, Pulo Bidan, kept about N. by W., is a good mark: during the night, there is no danger running in, if the weather be clear and the land distinctly seen; for in such case, even with a contrary wind, persons a little acquainted may work into the harbour without fear, as far as Pulo Teecoos, or even a little farther.

When passing over the flat bank, between the north part of the island and the main, the soundings are not a sufficient guide, the depths being nearly equal from side to side, until either shore is approached within $1\frac{1}{2}$ miles; therefore, in the night, it is necessary to attend particularly to the appearance of the land, to enable you to keep in the proper track. The shore of the main, being low and covered with trees, will not be so conspicuous as the high land of the island; consequently, the latter will generally appear nearest, when you are in mid-channel between them.

When Pulo Teecoos is approached, the water will gradually deepen, as you are then over the shoalest part of the bank, and ought to make short tacks in working up to the harbour, for here the channel becomes more contracted than farther out. The rocks that project a little way from Pulo Teecoos are steep to, and may be approached to 5 or $5\frac{1}{2}$ fathoms, at low water; and in $5\frac{1}{2}$ to 6 fathoms will be proper depths to tack from the edge of the mud bank that lines the shore of the island, from thence nearly to the Fort Point. In standing towards the main, tack when the depths decrease a little under those found in mid-channel; abreast the fort, and 2 or 3 miles to the northward of it, about 7 fathoms is good depth for tacking from the Queda shore.

In the night, do not run amongst the shipping, unless well acquainted, but anchor till daylight abreast Pulo Teecoos, or betwixt it and the Fort Point.

Directions for leaving the harbour.

Departing from the harbour, large ships generally go out by the North Channel, even when bound to the southward, although this occasions a loss sometimes of one or two days, when north-westers prevail in the S.W. monsoon. The directions given above will answer either for sailing out or in by this channel.

South Channel and contiguous banks.

A large ship ought not to adopt the South Channel unless a good pilot be procured, for several large ships have grounded on the sands which bound it.* Navigators in charge of large ships deeply laden are therefore, in general, averse to going out by the South Channel.

On the west side, the South Channel is bounded by the Long Sand, which begins

* The Lowajee, from Bombay, bound to China, going out by the South Channel, with a pilot on board, and drawing 21 feet water, got upon the Praya Sand nearly at high tide; here she lay 12 hours, and strained considerably by heeling off the bank, and the danger would have been great had she not fortunately floated on the following tide.

about three-quarters of a mile to the southward of the Fort Point, and stretches nearly to the north point of Pulo Jerajah, having a small channel of 3, 4, and 5 fathoms water betwixt it and the western shore.

The South Channel is bounded on the east side by Praya Sand, the Middle Ground or Spit, and Kio Flat: Praya Sand extends about $2\frac{1}{2}$ miles North and South, parallel to the Long Sand, from which it is about three-quarters of a mile distant; and the north end of it bears S. by E. $\frac{1}{2}$ E. from the fort flagstaff, distant about 2 miles, and is very steep to, having 9 and 10 fathoms at the distance of a cable's length: it should not be approached nearer than this distance, being the most dangerous part of the channel. Praya River, which is about a mile N. Eastward of the north end of Praya Sand, extends a considerable way inland, with $2\frac{1}{2}$ and 3 fathoms water at the entrance. The Middle Ground, or Spit, is a narrow ridge of sand, stretching North and South within one-fifth of a mile of the east side of the Long Sand; the narrow space between them is called the Bar, and has $3\frac{1}{4}$ and $3\frac{1}{2}$ fathoms on it at low water; the least water on the Middle Ground at low water spring tides is 17 feet. The south ends of the Middle Ground and Praya Sand join, and both terminate in the northern extremity of Kio Flat, a very extensive mud bank, which bounds the east side of the channel from thence to seaward, and is named from Pulo Kio, situated near the Malay shore.* This flat is a soft mud bank, stretching from the coast nearly to the S.E. end of Pulo Penang, having from $2\frac{1}{2}$ to 3 and 4 fathoms irregular soundings on its edge, where it bounds the east side of the channel.

Buoys were first placed on the eastern edge of the Long Sand, on each end of the Praya Sand, and on the north point of the Spit, to point out the bar and channel: these having been destroyed or taken away by the Malays, were afterwards replaced by beacons, which are also sometimes removed.

Remarks for proceeding by it to seaward.

Ships bound out by the South Channel generally weigh about half-flood, and steer S. by E. and South, to enter the channel between the Long Sand and Praya Sand; when the bar is approached, it will be proper to keep near the eastern edge of the Long Sand; the depth in crossing it is $4\frac{3}{4}$, or nearly 5 fathoms at high water spring tides. When over the bar, a South course should be steered; the water will deepen instantly to 7 fathoms, and afterwards shoal to $5\frac{1}{2}$ fathoms betwixt the north end of Pulo Jerajah and Kio Flat. When the north point of Pulo Jerajah bears to the northward, the soundings will decrease to 6 and 7 fathoms; it will then be proper to haul near that island, and these depths will continue through the channel, in steering past the S. E. end of Penang and Pulo Ramio, to seaward. The greatest depths are near the east sides of the islands, which are steep to; but on the east side of the channel, the water shoals suddenly upon the edge of Kio Flat. After passing Pulo Ramio close on the east side, the course is about S. S.W. or S. by W., according to the set of the tide, to proceed through the fair channel, betwixt Kio Flat and the mud bank on the west side the entrance.

The leading mark is, to keep the body of Pulo Jerajah on with the east end of Pulo Ramio, which will carry a ship fairly out: if Pulo Jerajah is shutting in with Pulo Ramio, she will be on the west side; and if entirely open with it, she will be on the east side of the channel.

The South Channel may be entered in fine weather, by ships drawing under 17 feet water; and pilots have been stationed at Pulo Jerajah, who will come out on the proper signal being made, and carry such ships into the harbour.

* This island, or rather these islands, for there are two, lie off the entrance of the Junjon River; in the Admiralty chart they are called North and South Kra; and the extensive flat outside of them is named the Great Kra Flat. In this chart, also, the sand, here called the Long Sand, is named the Middle Bank.

FROM PENANG TO THE ARROAS, AND TO PARCELAR HILL.

From Penang to the southward.

FROM the south-west end of Penang, Pulo Dinding bears nearly S. S.E., distant about 60 miles, and the coast between them, which is mostly low and woody near the sea, is slightly concave. High mountains appear inland, in the kingdom of Perah; there are also some hills near the sea, to the northward of Pulo Dinding, which, in coming from that direction, greatly resemble those of that island, and have therefore been called False Dinding.

The whole of the coast of Perah is lined by a shoal mud bank, extending out from 2 to 3½ leagues; the depth decreases suddenly on the edge of it, when under 15 fathoms, but you may occasionally stand into 9 or 10 fathoms in working, with the lead kept briskly going; it would be imprudent to borrow under these depths, particularly in the night.*

If abreast the N.W. end of Penang, with a fair wind, steer along the coast at a moderate distance, in soundings from 16 to 25 or 30 fathoms; in working, you may approach the island to 10 or 12 fathoms, and the edge of the mud bank that fronts the coast between it and Pulo Dinding may be approached to the same depths in daylight. By keeping in with the coast, the westerly current usually prevailing in the offing will be partly avoided; more favourable winds may be also expected, and if necessary to anchor occasionally, it can be done with more convenience than in deeper water.

Pulo Dinding.

PULO DINDING, in lat. 4° 16′ N., is high and woody; it lies near the main, and appears, when first seen, to have a hill at each end: close to it, on the S.W. side, lies Little Pulo Dinding, with two islets at its western part near the south point, to the W. S. Westward of which, at 4 or 5 miles' distance, there is a spit or bank of mud, probably not dangerous. We shoaled suddenly from 14 to 6½ fathoms on its edge, and although perhaps about 6 fathoms may be the least water on it, a proper berth ought to be given it in passing. There is a shoal to the northward of Great Dinding, which is avoided by keeping out in 9 or 10 fathoms.

To sail to the anchorage.

At the east end of Great Dinding there is a stream of fresh water near the ruins of the Dutch fort. If you wish to procure water at this place, pass betwixt the northernmost Sambilangs and Little Dinding, where the depths are mostly from 20 to 26 fathoms. There is a rock above water, nearly mid-way betwixt Great Dinding and the Sambilangs, having a safe channel on either side; the rock is best avoided by attending to the tide, and steering close along the bold south shore of Dinding to the east point, where you may anchor in 8 or 10 fathoms close to the eastward of the point, or to the southward of it, as seems most convenient. H. M. S. Harrier anchored here, March 12th, 1834, in 7 fathoms about a quarter of a mile off the sandy beach. A spit of sand with 1 fathom water extends from the inner part of Pulo Katta, the whole length of the island; this joins the mud bank that fronts the main, at the north entrance of Dinding Strait, having 5 fathoms water between the spit and the Malay shore.

* The Alfred and True Briton, at 8 P. M. September 29th, 1799, grounded on the edge of the bank, not far to the southward of Penang, the south point of it bearing N. N.W., Saddle Island N. N.W. ½ W., off the low land on the Malay shore about 7 miles. They were employed from that time until the 4th of October in carrying on their stream and kedge anchors, and heaving the ships up to them each tide at high water, through the soft mud, when both ships got fairly afloat. This case shews the propriety of not making too free with the edge of the bank in the night. See the directions for sailing along the Malay side of the Strait, p. 218.

Captain Vassall, of the Harrier, sent an officer to examine the north entrance of the strait, and he found the passage between the islets and the north point of Great Dinding to be about a quarter of a mile wide, with depths of 6, 7, 8, to 10 fathoms, and room for a ship to sail through with a fair wind, or to back and fill through with the tide, when the wind is contrary.

THE SAMBILANGS, or NINE ISLANDS, lying off the entrance of Perah River, to the southward of Dinding, extend 7 or 8 miles nearly N. E. and S.W.; they are mostly small, high, bluff islands, covered with trees, and discernible about 7 leagues. The South Sambilang, or outermost of these islands, is in lat. 4° 3′ N., lon. 100° 35′ E., bearing E. ½ N. from Pulo Jarra, distant about 7 leagues. To the N. Westward of it about 1 or 1½ miles, there is a rock speckled *black* and *white*, which appears *all white* when the sun shines on it; and about 2 miles to the N. N.W. of the same island, and a mile from the former rock, there is a *black* rock, not much elevated above water. These rocks should not be approached in the night, being steep to; for the soundings near them, and 1 or 2 miles outside, are generally from 23 to 26 fathoms, and the same depths are found very near and amongst the Sambilangs. There is a safe channel inside these islands, with soundings of 15 to 23 fathoms, and the channels betwixt some of them are also safe, but rather narrow. Sambilangs.

PERAH or PERAK RIVER, the entrance of which lies about 8 miles to the eastward of the Sambilangs, is said to extend 150 miles inland. The entrance, which is wide, is formed between the points of Oorlong and Pulo Ratta, but in the middle and south side of the entrance the water is shoal, and there are many places dry at low water, from thence South towards Salangore. The proper channel into Perah River, is to the S. Eastward of Pulo Dinding, by borrowing near the north point of the entrance, and keeping along the low bank on that side the river, where the depths are irregular from 2½ to 3, 5, and 7 fathoms. The tides inside have a velocity of 4 to 5 miles per hour during the springs. Perah River.

Captain Vassall, of H. M. S. Harrier, went above 30 miles up this river in March, 1834, and at low tide obtained a supply of water of excellent quality. The only part of difficult navigation is the entrance, where the banks are shoal; but this fine river, which becomes a mile in width in some places, with depths of 4 and 5 to 10 and 11 fathoms, may be navigated by ships drawing 15 feet without difficulty. The banks of the river are mostly all low jungle.

PULO JARRA, in lat. 4° 0′ N., lon. 100° 12′ E., bearing South from the centre of Penang, distant 27 leagues, is small, covered with trees, and may be discerned about 7 leagues. It is steep to, having from 33 to 36 fathoms very near it in every direction, and the same depths between it and Pulo Varela. In mid-channel, betwixt it and the Sambilangs, there are generally from 30 to 32 fathoms, decreasing to 25 or 26 fathoms near the latter islands. Pulo Jarra.

Although Pulo Jarra may be passed on either side, the channel betwixt it and the Sambilangs is preferable, for the current often sets strong to the N. Westward in the middle of the strait, and calms are more prevalent there than near the coast.

THE ARROA ISLANDS, consisting of several small islands and rocks, lie nearly mid-way between the Sumatra shore and the extensive bank, near the parallel of 3°, called the North Sands.

Round Arroa. The ROUND ARROA, in lat. 2° 49′ N., lon. 100° 40′ E.,* is a high, round rock, with some trees on it, bearing from the South Sambilang about S. ½ E., distant about 24 leagues, and may be discerned about 6 leagues. It has several rocky islets near it, two of which are visible 4 leagues: one of these lies to the northward, the other to the southward, with straggling rocks around; and about 1½ miles S. S. W. from the Arroa, there is a rock above water, called the South Rock. The Round Arroa is the principal mark for the western part of the East and West Channel, betwixt the sands.

Long Arroa. The LONG, or GREAT ARROA, in lat. 2° 52½′ N., bearing nearly N.W. from the Round Arroa, distant 6 miles, consists of two contiguous isles, and is nearly a mile in length; it is covered with trees, flat, and not so high as the Round Arroa: the shores appear to be lined with rocks, and a reef extends from it to the N. E. about half a mile. The Malay fishermen sometimes frequent these isles to fish, and procure turtle; boats landing here ought, therefore, to be on their guard. Water. Water can be got in a cove with a fine sandy beach, on the east side the southernmost of the two isles. The Locko, in 1787, sent her long-boat to procure water, but the Malays, *then* residing here, would not allow the boat to have any without payment.

Captain Ross, the Company's Marine Surveyor, who surveyed these isles in 1819, says, a ship may anchor near enough to command the watering places with her guns.

April 30th, 1811, the William Pitt's boat landed here, and saw a small hut, which appeared to have been inhabited a short time before. Several springs of good water descended into the deep valleys, which were lined on each side with cabbage trees; and the face of the island was covered with strong high grass. They had 10 fathoms water close to the sandy beach, but the small islets which front the Arroa are mostly united by reefs of sharp pointed rocks, few of which are visible at high water, or at the distance which ships pass. Within a mile of the N.W. and north sides of Long Arroa, the depths are regular from 9 to 11 or 12 fathoms. Tides. The tide appeared to rise on the rocks about 10 feet perpendicularly.

Western Arroa. The WESTERN ARROA is the name applied to the group of islets and rocks lying about a mile to the westward of the Long Arroa, and on the same rocky bank.

The Arroas ought not to be approached in the night, on account of the rocks adjacent; one of these, called the East Rock, is a *flat black rock*, very little elevated above the surface at high water, and lies about 4½ miles N.E. by N. from the Round Arroa, and Rocks. nearly East from the Long Arroa 6½ miles. West or W. ½ S. from the East Rock 1½ miles, there is a *sunken rock*, covered at half-flood, on which the sea sometimes breaks; the ship Seton, of Bombay, passed between this sunken rock and the East Rock, in 1796, and carried soundings from 17 to 11 fathoms. Nearly 2 miles West from this sunken rock, and 3¼ miles to the eastward of Long Arroa, there is another rock above water, called High Rock, surrounded by other rocks; but there are 9 fathoms regular soundings between this rock and the sunken rock East from it; and between it and the Long Arroa the depths are from 7 or 8 to 10 fathoms, in a channel 2½ miles wide. About 2¾ miles N. Eastward from the Long Arroa there is a rock of considerable height above water, called North Rock, with regular soundings very near the rocks that front it, of 8 and 9 fathoms, mud.

Channel to the southward of the Arroas. Several ships have been set to the westward of the Arroas by currents, and have lost much time working with northerly winds round the Long Arroa, and the black rock off it; finding, however, mostly regular soundings, over a soft bottom. The Lowajee, and other ships, which fell to the westward of the Arroas, during northerly winds,

* Captain Ross made it in lat. 2° 48′ 15″ N., lon. 100° 38′ 15″ E.

went to the southward of them, and after passing the Round Arroa, hauled to the N. Eastward into the proper channel, having experienced various soundings from 7 to 11 fathoms to the southward of these islands.

Captain Ross observes, that if a ship happen to be working near the Arroas against a heavy N.W. swell, she will find shelter from N.W. or West winds, by anchoring under the Long Arroa, observing, that a reef (before mentioned) projects about half a mile from its north end to the N. N. E.

Passage from the Sambilangs to the western edge of the North Sands.

Being about mid-channel, between Pulo Jarra and the South Sambilang, or rather nearer the latter, to guard against westerly currents, steer about S. S. E., or S. 20° E., if you pass near the Sambilang, which will carry you well to the N. E. of the Arroas, but not too far on the North Sands. Excepting a shingly spot in lat. 3° 20′ N., bearing South from the Sambilangs, with 13 fathoms on it, the soundings in this track are pretty regular, generally between 34 and 40 fathoms in a direct line from Pulo Jarra nearly to the Arroas, and 24 to 30 fathoms in a direct line between the South Sambilang and western extremity of the North Sands.

When the winds incline at eastward or E. S. Eastward, keep near the Malay coast, in soundings from 20 to 30 fathoms, until 8 or 10 leagues past the Sambilangs; then steer more southerly to get soundings of 16 or 18 fathoms on the north-western verge of the North Sands; and as there is no danger on the north-western and western edges of these sands, they may be rounded close, by borrowing occasionally to 14 or 16 fathoms, and edging out to 20 or 24 fathoms as circumstances require, until the Arroas or Parcelar Hill are seen.

North Sands.

THE NORTH SANDS are very extensive, consisting of various small patches or spits of sand, separated by considerable spaces of regular soundings from 8 to 12, 14, and 16 fathoms. There are many dangers on the eastern part of the North Sands, adjacent to the coast; the middle and southern parts are also dangerous, but the north-western and western edges may be approached with safety, if the lead is kept briskly going. The N.W. extremity of the sands is in lat. 3° 16′ N., lon. 100° 50′ E., (Position.) and from hence most of the spits stretch about S. E. by S., the Two-and-Half Fathoms Bank, in lat. 2° 53½′ N., being the southernmost danger of the North Sands.

The depths decrease quickly in approaching the N. Western extremity of the North Sands, from 28 or 26 to 10, 9, or 8 fathoms, on the spits that form this part, which bear N. N. E. from the Arroas, 8 or 9 leagues distant. On the spits which form the N. Western and Western boundary of the sands, there appear to be no dangers; I have generally found the depths on the *outer* spits to be 9 and 10 fathoms, when standing upon them with a working wind; 7½ or 8 fathoms on the spits a little farther on the bank to the eastward; and from 11 to 14 fathoms in the channels between them. When the Round Arroa is seen from the mast-head bearing from S. S.W., to S. S.W. ½ W., you are on the N.W. edge of the North Sands, and will pass over spits of 8 and 10 fathoms. The Round Arroa S. S.W. ¼ W., seen from the fore-yard, we had 7¼ fathoms. The Round Arroa from the fore-yard S.W. ½ S., and Parcelar Hill E. by S. ¼ S., just visible from the poop, had 7 fathoms, hard sand.

Directions.

As the spits which form the exterior boundary of the North Sands to the N. Westward have 9 or 10 fathoms on their edges, it is advisable, when bound to the southward with a contrary wind, to keep near the western edges of the sands in working, making short tacks to the westward, and standing on their verges occasionally to 10 or 11 fathoms in a large ship, or to 8 or 9 fathoms in a small one. By this means,

moderate depths will be found for anchoring during the ebb, with tides more regular, and more favourable, than farther out in deep water towards the Arroas; for here, during S. E. winds, a current is often experienced to set to the north-westward and westward, when tides are prevailing along the edge of the sands. It is high water about the Arroas, and near the western edge of the North Sands, at 6 hours on full and change of moon; the strength of the ebb sets generally between N.W. and N.W. by N., $2\frac{1}{2}$ miles an hour, and it falls about 10 or 14 feet perpendicular; the flood sets in the opposite direction, about S. E. $\frac{1}{2}$ S., slanting a little on the western edges of the North Sands, or running nearly parallel to them, but it is not so strong as the ebb.

Tides.

Although the north-western and western edges of the North Sands are not dangerous, it would be very imprudent to stand over towards the middle of them, on account of the Blenheim Shoal, and other dangers explored by Captain Ross; nor ought the southern extremity of the sands, usually called the North Sand Head, to be approached but with great caution, it being terminated by the Two-and-Half Fathoms Bank.

Shoal banks and dangers on the North Sands.

Besides the Two-and-Half Fathoms Bank and Blenheim Shoal, Captain Ross discovered several other dangers and shoal patches, during his examination of these sands, in 1819; of these, the following seem to be nearest to the N.W. and western parts, and consequently are most in the way of ships which may happen to borrow too far in upon the sands.

Small Bank, with $4\frac{3}{4}$ fathoms, in lat. 3° $13\frac{1}{2}'$ N., lon. 100° 52′ E., or 14 miles East from the meridian of Round Arroa, and 4 miles to the S. E. of the N. Westernmost extremity of the sands.

Sandy Ridge, with 2 to 4 fathoms, extending 3 miles S. E. and N.W., or from lat. 3° 10′ N. to 3° 12′ N., its N.W. end being about 3 miles E. S. E. from the above Small Bank, and its S. E. end bearing North a little westerly about 6 or 7 miles from Blenheim Shoal.

A Spit of Rocks and Sand, with only a few feet water; its N.W. end is in lat. 3° 9′ N., and about 2 miles S. E. from the Sandy Ridge. It extends 3 miles S. Easterly, its S. E. end being about 4 miles N. E. from the Blenheim Shoal.

A Round Small Bank, of $2\frac{1}{2}$ fathoms, in lat. 3° $4\frac{1}{2}'$ N., mid-way, and in a direct line between the south end of the above Spit of Rocks and Sand, and Blenheim Shoal, being distant from each of them about 2 miles.

A Patch of $4\frac{3}{4}$ fathoms, in lat. 3° 4′ N., about 3 miles W. by N. from Blenheim Shoal, and near the western part of the sands.

A Bank of $4\frac{1}{4}$ fathoms, about $1\frac{1}{2}$ miles in extent, in lat. 2° 59′ N., bearing South a little easterly from Blenheim Shoal about 4 miles, and from the Two-and-Half Fathoms Bank N. by W. $\frac{1}{4}$ W. distant 6 miles.

Blenheim Shoal, and southern part of the North Sands.

BLENHEIM SHOAL, in lat. 3° $3\frac{1}{4}'$ N., bearing about N. by W. 3 leagues from the Two-and-Half Fathoms Bank, and considerably to the eastward of the edge of the North Sands, was not known until H. M. S. Blenheim, of 74 guns, Admiral Troubridge, by standing far over on the sands, grounded, and was nearly lost; although this happened during neap tides, they were obliged to lighten her, by cutting away the masts, and taking out the guns, &c., before she could be hove off the shoal. Captain Bissel, of that ship, gave the following account of the shoal, dated H. M. S. Blenheim aground, April 6th, 1806: Peak of Salangore Hills N. 56° E., another hill, *probably False Parcelar*, N. 66° E., Parcelar Hill E. 23° S., distant $8\frac{1}{2}$ or 9 leagues, observed lat. 3° 3′ N. It extends E. N. E. and W. S.W. about $1\frac{3}{4}$ miles, having only 6 and 7 feet in many places at low water *neap* tides, consequently less on the springs.

TWO-AND-HALF FATHOMS BANK, in lat. 2° 53′ N., distant 5 leagues West from the south entrance of the Strait of Callam, may be considered the most dangerous part of the North Sands, because it fronts the north side of the channel between the Arroas and Parcelar Hill. H. M. S. Victor examined it with her boats in January, 1805, and found it to extend from N. N.W. to S. S. E. about 1½ miles, and about one mile from E. N. E. to W. S. W. When on it, Parcelar Hill bore E. ½ S., a hill called False Parcelar N. E., and the low land was just visible with the eye elevated 16 feet above the sea. From 2½ to 3 fathoms were the depths found on it at low water, and it appeared very hard, the lead frequently dipping into holes, as if on rocks, but brought up only fine sand; around the bank the depths increase from 4 and 5 to 10 and 11 fathoms, mostly hard bottom; and eddies may be seen if the tide is strong, when crossing the spit that projects from its southern extremity into the channel. If a ship in borrowing towards the bank with a northerly wind get soundings on this spit or tail of the Two-and-Half Fathoms Bank, she ought not to go under 10 or 11 fathoms, but must edge out to the southward. Several ships have grounded upon this bank at different times, by running in the night, or by borrowing too closely in the day, and were in great danger of being wrecked.

Two-and-Half Fathoms Bank.

There is a safe passage between the Two-and-Half Fathoms Bank and Blenheim Shoal, for H. M. Sloop Victor had from 7 to 12 and 14 fathoms, mostly hard sand, steering from the former N.W. and Northward, and she passed close on the S.W. side of Blenheim Shoal without discerning it, although she shoaled there to 5½ and 5 fathoms. From thence, she steered N.W. by N. and N. N.W. over the western parts of the North Sands, in regular soundings from 8½ to 12 fathoms sandy bottom, the least water being 8½ fathoms; and the depth increased to 16 and 18 fathoms when she got upon the northern extremity of the sands. The Mornington passed to the northward of the Two-and-Half Fathoms Bank, then betwixt it and Blenheim Shoal, December 12th, 1803, and carried soundings from 6 to 8 and 10 fathoms, with Parcelar Hill bearing about E. by S. ½ S.

The Albion, in September, 1800, with Parcelar Hill E. S. E., stood on the sands, steered eastward, and had no less soundings than 7½ fathoms crossing over to the low land off Callam, where she tacked in 5½ fathoms.

Parcelar Hill kept E. by S. nearly ¼ S. is the best bearing, according to the survey of the North Sands, by Capt. Ross, for any ship intending to pass to the northward of the Two-and-Half Fathoms Bank, to avoid the bank of 4¼ fathoms, described above; and this bearing will carry her in mid-channel between the Blenheim Shoal and the Two-and-Half Fathoms Bank. In working through this passage, with a contrary wind, Parcelar Hill should be kept between E. ¾ S. and E. by S. ¾ S., to avoid the Two-and-Half Fathoms Bank on one side, and Blenheim Shoal on the other: within the limit of these bearings of Parcelar Hill there is no danger, as the channel is about 7 or 8 miles wide, between the above-named shoals.

Although with Parcelar Hill bearing between E. by S. and E. by S. ½ S., there is a safe channel over the North Sands, betwixt the Two-and-Half Fathoms Bank and Blenheim Shoal, it has not been used by large ships, as the tides run in strong eddies over the sands during the springs. There is a channel, which was formerly frequented, over the eastern part of the North Sands near the land, bounded on each side by dry sands or breakers, but it now seems intricate, even for small vessels. A brig proceeding through it, not long ago, on her passage from Penang to Malacca, worked through between the breakers, in soundings mostly 5 and 6 fathoms, where the channel appeared to be from half a mile to a mile broad.

Soundings in the channel betwixt the North Sands and Arroas.

THE SOUNDINGS between the western part of the North Sands and Long Arroa are irregular from 35 to 46 fathoms, about mid-channel, decreasing fast near the edge of the sands to 20 or 18 fathoms; the deep water extends within 4 or 5 miles of the North Rock lying to the northward of Long Arroa; it then shoals suddenly to 20 and 18 fathoms, about 2 miles to the N. Eastward of that rock: but in some places the soundings are very irregular, particularly to N. E. and northward of the rocks which lie near the round Arroa.

Working in the night.

Working between Long Arroa and the North Sands in the night, 16 or 18 fathoms are good depths to tack in, from the edge of the sands: the mid-channel track, and your proximity to the rocks off the Arroas, will be known by deep soundings of 35 to 46 fathoms; but farther eastward, betwixt Round Arroa and the S.W. part of the North Sands, the depths decrease, and are there generally irregular, being from 14 to 25 fathoms from side to side, except upon the bank adjacent to the Arroa. The soundings are more regular contiguous to the edge of the North Sands than in the south side of the channel.

Rounding the edge of the North Sands.

If in rounding the edge of the North Sands, Round Arroa be never *entirely* sunk from the quarter-deck of a large ship, or with the eye elevated above the sea 16 or 17 feet, she will not be too close to the sands; but when the Arroa is sunk from the poop, she will get upon some of the outer spits, into 7 or 8 fathoms, hard sand.

Small banks on the south side of the channel.

THE BANKS in and contiguous to the south side of the East-and-West Channel, between the Arroas and Parcelar Hill, are the following:—A small bank about 7 miles, N.E. from Round Arroa, and 3 or 4 miles distant from the East Rock, or flat black rock; the least water found on it has been $5\frac{1}{2}$, 6, 7, and 8 fathoms. To the N. W., about 3 miles from this bank, there is deep water of 40 and 42 fathoms; and the soundings between it and the edge of the North Sands are mostly regular from 15 to 20 fathoms.

There is a small bank, bearing East southerly from Round Arroa, distant about $4\frac{1}{2}$ leagues, on which the least water we found, in the Gunjavar, was $4\frac{1}{2}$ fathoms, hard sand.

Another small round bank lies 16 or 17 miles East from Round Arroa, and about W. $\frac{1}{2}$ S. from Parcelar Hill, which is alarming to strangers who suddenly get on it, although not dangerous. Sounding all over it, we had not less than 5 and $5\frac{1}{2}$ fathoms, hard sand, at low water spring tides; and from the ship at anchor, on the middle of it, the boats deepened fast in every direction, about the distance of a cable's length, to 12 and 14 fathoms.

From this small bank, about 3 or 4 miles E. by S. to E. S. E., there are other shoal patches of hard sand, with soundings of 6, 7, and 8 fathoms on them. From these shoal patches on the south side of the channel, between the Arroas and the land of Parcelar, the Round Arroa bears W. 2° S. southerly to W. 1° N., and Parcelar Hill E. 7° N. to E. 9° N.; and the westernmost of them, more *particularly*, are much nearer to the Arroa than to the low land of Parcelar. The least water on any of them is *probably* $4\frac{1}{2}$ or 5 fathoms, but they are alarming to strangers, and will be avoided by not bringing the Round Arroa to the westward of W. $\frac{1}{2}$ S., or W. $\frac{3}{4}$ S., whilst it can be discerned from the poop of a lofty ship; or by keeping Parcelar Hill to the eastward of E. $\frac{1}{2}$ N., in passing them.

South Sands.

THE SOUTH SANDS are formed of small banks, similar to those of the North Sands, and some of the patches last mentioned are probably the prominent patches

of the N.W. end of the sands, generally called the South Sand Head: the breadth of the channel between it and the North Sand Head is nearly 7 miles. In June, 1795, Captain Mackintosh, in the Sarah, got upon this extremity of the South Sands; they saw the Round Arroa from the mizen shrouds before dark, bearing S. by W. $\frac{1}{4}$ W., and steered between S. E. by S. and E. by S., in soundings from 25 to 16 fathoms until 10 P.M., when they shoaled quickly to $8\frac{1}{2}$ fathoms, and anchored. At daylight, they found they were far to the southward, Parcelar Hill bearing E. 15° N.; weighed with the wind at S. S. East, steered N.W. and N.W. by W. in regular soundings, decreasing gradually from $9\frac{1}{2}$ to $6\frac{3}{4}$ fathoms, when the hill bore E. $11\frac{1}{2}$° N.: deepened afterwards to 14 fathoms, steered N. N. E. and N. E. by N. in $8\frac{1}{2}$ to 20 fathoms, the hill E. 9° N.; then steered towards the hill bearing E. 7° N., and had no less than 20 fathoms. When this ship shoaled to $8\frac{1}{2}$ fathoms, with Parcelar Hill bearing E. 15° N., she was probably not far from danger on the South Sands, as will appear by the following extract from the journal of the Henry Addington.

Extracts from the journals of the Sarah, Henry Addington, and other ships.

August 31st, 1811, at noon, saw breakers on the South Sands, bearing from South to S. by E., distant about 6 miles; Parcelar Hill bearing E. 16° N., east point of Pulo Loomat N. 56° E., body of Pulo Callam N. 40° E., in 26 fathoms. The Essex, in company, had Parcelar Hill bearing E. by N. $\frac{1}{2}$ N., distant 12 or 14 miles, the trees under the south end of the hill just visible, but none of the low land to the southward, when the breakers bore S. $\frac{1}{2}$ E. 5 or 6 miles, and *Long Rollers* about the north point of the South Sands S.W., then in 25 fathoms. The Cumberland, also in company, had Parcelar Hill bearing E. 15° N., distant about 12 or 14 miles, when the body of the breakers bore S. 9° E. about 4 miles, appearing to extend about three-quarters of a mile in a N.W. and S.E. direction, and are probably not visible except when the tide is low, or with a considerable swell.

H.M.S. Alligator, July 18th, 1832, had only $2\frac{3}{4}$ fathoms on one of these dangerous patches, with Parcelar Hill bearing E. by N. $\frac{1}{4}$ N.

The South Sands, from the N.Western extremity to abreast of Parcelar Point, were very little known, until the survey of these dangers by Captain Ross, in 1819.

The General Kyd, September 17th, 1821, at 5 P.M. lost sight of the Round Arroa, bearing S. 83° W.; at $6\frac{1}{4}$ P.M. Parcelar Hill bore E. 2° N., at $10\frac{1}{2}$ P.M. it bore N. 65° E., seen with the night glass, and ten minutes after, she suddenly grounded on one of the northernmost patches of the South Sands, where she lay in great danger till the 23rd. She was then, after great exertion, hove clear of the sand, with the assistance of Captain Welstead, and the boats of the General Harris, throwing overboard part of the cargo, guns, &c. After getting clear of the sand, and warping out into 15 fathoms water, Parcelar Hill bore N. 60° E.

About S.W. from Parcelar Hill, and 5 leagues distant from the nearest part of the land, H. M. S. Albion, in 1804, got into 6 fathoms upon one of the northern patches, which is probably the nearest to the land in that part. The Vansittart, August 15th, 1815, steering S. E. $\frac{1}{2}$ E., at 3 A.M. grounded in $3\frac{3}{4}$ fathoms, and had 7 fathoms under the stern; hove the sails aback, and floated off, then anchored; but a squall coming from southward, she cut her cable, steered West about 3 miles, and anchored at $4\frac{1}{4}$ A.M. in $10\frac{1}{2}$ fathoms, with Parcelar Hill, at daylight, bearing N. $21\frac{1}{2}$° E., and the low land about Parcelar Point N. 51° E.

The eastern part of the South Sands, bearing between S. by E. $\frac{1}{2}$ E. and S. by W. $\frac{1}{2}$ W. from Parcelar Point, is very dangerous. Several ships have grounded upon the patches of which it is formed, and were nearly lost; as the easternmost of these patches lie nearly opposite Bambek Shoal, the channel between them is much con-

Dangers on the eastern part.

tracted, and more dangerous here than in any other part of the strait from Parcelar Hill to the Carimons.

On this extremity of the South Sands, the patch nearest to the land is distant 12 or $11\frac{1}{2}$ miles from the coast about 5 miles eastward of Parcelar Point, and consists of small pyramids of hard sand, with only $1\frac{1}{4}$ and $1\frac{1}{2}$ to 2 fathoms water upon them. The Hornby tacked in 9 fathoms close to one of the patches with Parcelar Hill N. by W., and Cape Rachado, appearing like an island, E. $\frac{1}{2}$ S ; the boat, on examining it, found only $1\frac{1}{2}$ fathoms water.*

Extracts from the journals of the Lord Macartney, Besborough, and Trident.

The Lord Macartney, aground on one of these patches in 9 feet at low water, had Parcelar Hill bearing N. by W. and Cape Rachado E. 5° S. ; this seems to have been the patch last mentioned. Prior to grounding she must have been some time on the South Sands, for she steered E. N. E. 4 miles in 18 to 13 fathoms, next cast 5 fathoms, and then grounded. She lay on the sand from the 21st to the 29th of August, 1792, and was nearly lost, having been obliged to discharge much of the cargo, into two vessels sent to her assistance from Malacca.

The Besborough, aground, had Parcelar Hill N. $\frac{3}{4}$ W., and Cape Rachado E. $\frac{1}{2}$ S. about $6\frac{1}{2}$ leagues ; the Lascelles in company, at the same time, at anchor in 8 fathoms, bore from the Besborongh S. by W. about half a mile. When the Besborough floated, they steered between E. S. E. and S. S. E., in irregular soundings from 8 to 17 fathoms, hard ground. The Indus, of Bombay, and other ships, also grounded, and were nearly lost upon these dangerous pyramids, which form the eastern extremity of the South Sands.

About 5 miles farther S. Eastward, H. M. S. Trident had 5 fathoms on another patch of the eastern part of these sands, with Parcelar Hill N. by W. $\frac{1}{4}$ W., and Cape Rachado E. by N. ; she hauled to the eastward and deepened gradually.

The following banks or patches of the South Sands, contiguous to the common channel, and consequently most in the way of ships, were examined by Captain Ross, the Company's Marine Surveyor, in 1819.

Shoal banks and dangers on the South Sands.

In lat. 2° $41\frac{1}{2}'$ N., a patch with 3 and $3\frac{1}{2}$ fathoms, sand, nearly a mile in extent, bearing from Parcelar Hill W. S.W. $\frac{1}{4}$ S., distant 16 miles from Loomat Point, the nearest land, and S. by E. $\frac{1}{2}$ E. from the Two-and-Half Fathoms Bank about 12 miles. A small patch of 4 fathoms, about $1\frac{1}{2}$ miles to the N. E. of the above-mentioned 3 fathoms patch.

In lat. 2° 40′ N., a sand-bank, extending N.W. and S. E. nearly 3 miles, having depths of 3 to $1\frac{1}{2}$ fathoms on its centre, which bears from Parcelar Hill S.W. by W., and $14\frac{1}{2}$ miles distant from Loomat Point, which is the nearest land.

In lat. 2° $36\frac{1}{2}'$ N., a sand-bank, extending about N. E. and S.W. 2 miles, and 1 mile in breadth, with soundings on it from 2 to $3\frac{1}{2}$ fathoms, and bearing from Parcelar Hill S.W. $\frac{1}{2}$ S., nearly equidistant from Loomat Point and Parcelar Point, about 14 miles. About $2\frac{1}{2}$ or 3 miles west from the last-mentioned bank, is situated a small bank, with depths of 2 to 4 fathoms on it.

In lat. 2° 30′ N., the centre of a sand-bank, extending W. N.W. and E. S. E. 3 or $3\frac{1}{2}$ miles, with depths on it, from 2 to $2\frac{1}{2}$ and 3 fathoms, bearing from Parcelar Hill S. by W., distant $13\frac{1}{2}$ miles from Parcelar Point, the nearest and opposite land.

In lat. 2° 27′, and about 5 miles to the S. E. of the centre of the above, is the centre

* The H. C. S. Duke of Sussex, in August, 1831, tacked near a shoal patch, on which her boat found $5\frac{1}{4}$ and 4 fathoms ; the bearings taken just before tacking were Parcelar Hill N. 19° W., Cape Rachado S. 88° E. ; this shews that the shoal ground extends farther to the eastward than has been usually marked in the charts. (See *Naut. Mag.* for 1833, p. 3.)

of a narrow sand spit, which extends 3 miles N.W. by N. and S. E. by S., having on it only $\frac{1}{4}$ and $\frac{1}{2}$ fathom water.

In lat. 2° 25′ N., a small sandy patch, with 4 fathoms water on it, bearing West from Cape Rachado, S. by E. from Parcelar Hill, and South from Parcelar Point.

In lat. 2° 28′ N., and about 3 miles N. by E. from the above small sandy patch, lies the easternmost dangerous patch of the South Sands, extending about a mile N.N.W. and S. S. E., having only 1$\frac{1}{4}$ fathoms water over the hard sandy bottom, and bearing about W. $\frac{3}{4}$ N. from Cape Rachado, distant 7 leagues from Parcelar Hill S. by E. $\frac{1}{4}$ E., from Parcelar Point S. $\frac{1}{2}$ E. distant 13$\frac{1}{2}$ miles, from Bambek Shoal W.S.W. $\frac{1}{2}$ S. 10 or 11 miles, and from the nearest land to the eastward of Parcelar Point distant 12 miles.

East-and-West Channel.

TO SAIL through the EAST-AND-WEST CHANNEL, between the sands, with a strong and steady S.W. wind, give the western edge of the North Sands a berth, by keeping about mid-channel betwixt it and the Arroas, until the Round Arroa is brought to bear about W. S.W.; then steer more easterly, sinking it from the deck when it bears about W. $\frac{3}{4}$ S., or W. $\frac{1}{2}$ S.

With the wind light or variable, between North and S. E., steer from Pulo Jarra or the Sambilangs, for the western verge of the North Sands, and keep along it in 18 or 20 fathoms, borrowing to 12 or 14 fathoms occasionally, and edging off to 20, 24, or 26 fathoms, as circumstances require. When the Round Arroa is discernible bearing about S. S.W., the Long Arroa will be seen about S.W., and the former ought *then* to be kept in sight from the quarter-deck of a large ship, or from the poop of a small one, in soundings from 16 to 20 fathoms; for there is no danger on the edge of the North Sands, if the Round Arroa can be seen from the quarter-deck. After the Arroa is brought to bear W. S.W., steer an easterly course, as the wind and tide require, to sink it from the deck, bearing W. $\frac{3}{4}$ S., and 14 or 15 fathoms will be the least water. When the Round Arroa is no longer visible, bring Parcelar Hill to bear East, and draw it to E. 5° N., or E. 6° N., by the time the low land of Pulo Callam is appearing from the deck, being then abreast of the Two-and-Half Fathoms Bank. With Parcelar Hill E. 3° S., you will get upon this bank: the hill E. 2° S. will just clear it, and you may probably cross over the tail or spit in 7 or 8 fathoms, with Parcelar Hill E. 1° S., or E. 2° S.; but the hill should not be brought to the southward of East when passing this bank, as all compasses are more or less uncertain. From the bank, a spit extends to the southward a considerable way into the channel, with a gradual increase of depth upon it proportionate to the distance from the bank; with Parcelar Hill E. 2° N., you will carry 11 or 12 fathoms in crossing the spit, and with the hill E. $\frac{1}{2}$ N. you will pass clear to the southward of it in 17 or 20 fathoms.

This spit is sometimes called the Eastern Bank, it being nearer the low land of Parcelar than any other bank in the East-and-West Channel; for there are several spots of 10, 11, or 12 fathoms farther to the westward, exclusive of the shoal patches already mentioned; these lie on the south side of the channel betwixt the Round Arroa and South Sand Head. The depths in the fair track are usually from 15 to 20 fathoms, and in the western part of the channel they are subject to the least irregularity in the vicinity of the North Sands; but in the eastern part of it, opposite the Two-and-Half Fathoms Bank, they are liable to the least irregularity in the neighbourhood of the South Sands, and generally here the depths are from 20 to 23 fathoms.

When the tide runs strong in the springs, eddies are perceived upon the spit that projects from the Two-and-Half Fathoms Bank, indicating its proximity. Between

the Sand Heads, the strength of the ebb sets nearly N.W., but the first and latter parts of it run very irregularly. The flood is more regular in its direction, and runs with less velocity, but is liable to vary, which renders passing the Two-and-Half Fathoms Bank dangerous in the night, unless a ship is near it before dark, and her situation is well determined; or unless the night is so clear that Parcelar Hill can be distinctly seen and its bearing taken.

Parcelar Hill is obscured at times during the day by clouds, when the *low* land of Pulo Callam, or that to the westward of the strait, may be visible from the Two-and-Half Fathoms Bank; if so, the body of this piece of *low* land kept N. E. by E. ½ E., or the east end of the same E. N. E., are good bearings to pass clear of the bank, and in coming from the eastward, if it is sunk from the quarter-deck of a large ship with these bearings, she will be clear to the westward of that danger.

In proceeding through the channel, when the Round Arroa is sunk from the deck, and Parcelar Hill bearing E. 8° N., a ship will be near shoal water on the extremity of the South Sands; with the hill E. 7° N., she will pass over some of the small patches of 5 or 6 fathoms, sand, having 16 or 17 fathoms around them. And when the Round Arroa is just disappearing, with Parcelar Hill bearing E. ¼ S., she will be near the edge of the North Sands. The hill bearing East when in the western part of the channel, to E. 6° N. when the low land is seen from the deck, are safe bearings to work with, throughout the middle and eastern parts of the channel, if the compass be true; and 13 fathoms is a good depth to tack in from either side, when passing between the Sand Heads.

When abreast the Two-and-Half Fathoms Bank, or in crossing the spit that projects from it, the low land of Callam is plainly seen from the quarter-deck of a large ship; and from the poop the tops of the trees may be discerned, stretching from Pulo Callam almost to Parcelar Hill. When the low land to the southward of the hill begins to appear, the channel becomes wide, being then past the Two-and-Half Fathoms Bank and South Sand Head; the hill may then be brought from East to E. by N. ½ N., in working towards the land of Parcelar; and if Pulo Callam is kept plainly in sight from the deck, a ship will not be too close to the South Sands.

Parcelar Hill. PARCELAR HILL, in lat. 2° 51′ N., lon. 101° 25½′ E.,* bearing E. 4° N. (*true*) from the Round Arroa, distant 48 miles, and 50 or 51 miles West from Malacca by chronometers, is of oblong form, sloping at each end when viewed from the westward, with the summit a little to the westward of its centre; but if not too far distant, of a regular pyramidal form of small elevation, when seen from the southward or S. S. Eastward; its declivity being very gentle towards each extremity. It is easily distinguished, being much nearer the sea, and having a darker shade than the other hills inland. From the N. Western extremity of the North Sands, its summit is just discernible from the poop or mizen shrouds of a large ship, bearing E. by S. ½ S. or E. S. E., and the highest part is generally set in taking the bearings of the hill, when passing through the East-and-West Channel. Directly fronting the hill, there is the mouth of a river.

Directions. After passing the Two-and-Half Fathoms Bank, and having the trees to the S. E. of Parcelar Hill visible from the deck in steering eastward for the hill, the water will soon deepen to 22 and 24 fathoms, soft ground; it will shoal again to 18 or 19 fathoms, when the land is approached within 6 miles, which distance from the coast

* Captain Ross made it in lat. 2° 50½′ N., lon. 101° 24¾′ E.

should be preserved in proceeding towards Cape Rachado. With a working wind, do not stand off above 3½ leagues from the land about Parcelar, nor approach the South Sands nearer than 27 fathoms, for the depths contiguous to them hereabout are not so great as to the southward of Parcelar Point, where deep water indicates the proximity of danger on the eastern part of the sands.

FROM THE SAMBILANGS TO SALANGORE, AND THROUGH THE STRAIT OF CALLAM.

When bound to SALANGORE, or when proceeding through the Strait of Callam, steer to the eastward after rounding the Sambilangs, until the coast is approached, which, from thence to Salangore, is low and level fronting the sea, and covered with trees. With a northerly or easterly wind, coast along in sight of the low land, keeping about 2, 3, or 4 leagues off, as circumstances require, observing not to raise the beach from the deck, nor borrow under 8 or 9 fathoms. *From the Sambilangs to Salangore.*

CAPE CARAN, or TANJONG AWAT, called also Mud Point, about 3 leagues N. Westward of Salangore, is encompassed by a shoal bank, which ought not to be approached under 5½ or 6 fathoms. About 5 miles W. N. W. from Cape Caran, and 3 or 4 miles off shore, there is a bank of sand and broken shells, of considerable extent, having only 3½ fathoms on its shoalest parts. On its edge, and between it and the shore, the depths are 5 and 6 fathoms; and as they decrease the bottom becomes hard. After the Sambilangs disappear, Salangore Hill may be seen from the deck bearing S. E. by E. or S. E. by E. ½ E., when in 10 or 11 fathoms, green ooze; a ship ought then to keep the white sandy beach sunk from the poop, in steering along the coast to the S. Eastward; this will carry her outside the shoal, in soundings of not less than 8 or 9 fathoms. When Cape Caran bears nearly East, or when the low land is visible beyond it, the beach may be raised with safety; but a berth of 1½ or 2 miles ought to be given this point, for, until past it, the water shoals suddenly from 6 or 7 fathoms, in standing towards the shore. After passing Cape Caran, the lead is a sufficient guide, in steering eastward for Salangore Road, as the water shoals gradually on the edge of the mud bank that lines the shore. *Cape Caran, or Tanjong Awat.*

SALANGORE HILL and FORT, in lat. 3° 20′ N., lon. 101° 17′ E., is on the south side the entrance of the river; and as the water is shoal to the southward, the best anchorage is abreast the river, in any depth at discretion from 4 to 6 or 7 fathoms, with Cape Caran bearing N.W., and the two Pulo Anzas S. by E. or S. by E. ½ E., about 3 leagues distant. The river is navigable at high water for vessels of considerable burthen, and there is no danger at the entrance, the bottom being soft mud. It is high water in the road about 5 hours on full and change of moon. This place was formerly frequented for tin and other articles of trade, which are now carried to Penang in the coasting proas. The Rajahs of Salangore, although not always deserving of confidence, have seldom been hostile to Europeans; but vessels at anchor in the road ought to be always on their guard, never allowing any proas to approach them during the night; for here, as well as in several other parts of Malacca Strait, piratical proas frequently lurk about in search of defenceless vessels, or to assault those who are not watchful. *Salangore.* *A caution.*

CALLAM, or COLONG STRAIT, is formed by Pulo Callam and its contiguous *Callam Strait.*

islands on the west side, and on the east side by the main land and Pulo Loomat: the latter is a large island to the northward of Parcelar Hill, separated from the main by a narrow strait, called the False Strait, in which are from 3½ to 9 fathoms water. The south entrance of this strait is the first opening to the westward of Parcelar Hill; and its northern entrance, called Callam River, or Black River, unites with Callam Strait, opposite to Deep Water Point. The north entrance of Callam Strait bears about S. E. by S. from Salangore Road, distant 6 leagues, and Parcelar Hill bears from it about S. S. E. ½ E.

Mudancoos Islands. The two islands, called Mudancoos, or Pulo Anzas, lie upon the eastern verge of a shoal adjoining to the inner part of the North Sands; they are steep to, and, with the edge of the contiguous sand, form the west side of the channel leading to Callam Strait. Opposite Pulo Anzas, and bearing about S. E. by S. from Salangore Road, are the Botel Islands; they lie on the bank that bounds the east side of the channel, distant from 1 to 3 miles from the shore. These islets or rocks must not be approached nearer than 1½ or 2 miles, for the reef projects about a mile outside of them, and there is also a reef extending two miles to the southward from the inner islets of the group; and one mile or more S.W. ½ S. from the southernmost or outer Botel Island, there is a dangerous rock, called the Calcutta Rock, having close to it 5 fathoms water.* To give a berth to these, it is proper on leaving Salangore Road with the flood tide, to steer about S. by E. for Pulo Anzas, because the tide sets S. E. to S. E. by S.

(Margin: Botel Islands.)

From the extremity of Botel Islands outer reef, called sometimes Sail Shoal, Pulo Anzas bears W. by S. about 3 miles: the channel betwixt them is safe, having from 5½ or 6 fathoms, mud, on the east side, to 9 and 10 fathoms within a mile of Pulo Anzas, and from thence to the entrance of Callam Strait the depths are mostly from 6 to 8 fathoms in the fair channel.

Directions. Having steered from Salangore Road, according as the tide may require to pass nearer to Pulo Anzas than to the Botel Islands, a course from thence about S. E. by S. will lead directly to the Strait of Callam. In working, tack in 8 fathoms towards the edge of the North Sands, when near Pulo Anzas; and approach no nearer to the Botel Islands than 5½ or 6 fathoms, giving them a berth of 1½ or 2 miles, observing to keep in soft bottom. When a little to the southward of Pulo Anzas, the channel may be traversed occasionally to 5 fathoms on either side, regular soundings, the bottom soft mud; but in standing to the southward, do not bring Pulo Anzas to the northward of N.W., for the entrance of the strait bears S. E. from these islands, and there is a shoal in a direct line between them and the west point of the entrance: the edge of the North Sands, bounding that side of the channel, lies nearly in the same direction; by bringing Pulo Anzas nothing to the northward of N.W., all danger on the west side the channel is avoided.

Northward a little from the entrance of the strait there is a shoal, which is avoided by keeping the Middle Botel Island on with Salangore Hill, taking care not to open the hill to the westward, which is also a mark for the fair channel. Another mark is, to keep Parcelar Hill about its own length on with the west point of the entrance; either side may be safely approached when inside the north point (called Green Point)

* The Calcutta brig was lost on this rock in 1799. In a manuscript chart, by Mr. Kitson, there is a rock laid down on which the Bornholm was lost, with Salangore Hill bearing N. 2° E., the northernmost Pulo Anzas W. by N., and the southernmost Botel Island about N. E. ½ N.: there are 7 fathoms marked betwixt this rock and the edge of the eastern bank; therefore, to avoid it, borrow towards Pulo Anzas into 8 or 9 fathoms in passing them.

of Callam Island, both sides being steep to, and clear of danger, but the bank extends to the northward of Green Point nearly half a mile.

FIRST, or NORTH REACH, extending nearly S. S. E. ½ E. about 5 miles, and 1¼ miles in breadth, is clear of danger, having 6 and 5 fathoms water very close to the shore on either side, and from 8 to 10 fathoms in mid-channel. The bluff point terminating this reach on the western side is the east point of Callam Island, and is called Deep Water Point, because the water deepens off it to 18, 20, and 22 fathoms; it is steep to, and should be approached within a small distance, to avoid the indraught of the river opposite. First Reach.

SECOND, or BAR REACH, extends from Deep Water Point about S.W., and after rounding that point, the deepest water is found towards the eastern shore: when the Second Reach is entered, an opening to seaward is perceived at the south part of it, which, however, admits of no passage, being entirely filled with sand-banks, dry at low water. A little to the westward of Deep Water Point there is a small creek; and on the eastern shore another, called Bar Creek, bearing about S. E. by S. from the former. After rounding Deep Water Point, the depths decrease fast to 6 or 7 fathoms in steering over for Bar Creek, and about a third of the channel distant from the eastern shore, is a proper track, to prevent being horsed by the flood too close upon that side. If unacquainted, anchor in 6 fathoms a little short of the bar, to sound and examine it before crossing, as the sands are liable to shift; two boats should be placed on it, to point out the best track. To the S.W. of Bar Creek there is another creek, and the bar begins at the former, stretching from thence across the strait. Between the creeks the water is very shoal, within half a cable's length of the eastern shore; but about one-third of the channel over from it, the deepest water, which is not more than 2¾ or 3 fathoms, is generally found on the bar at low water, and 4¼ or 4½ fathoms at high water, spring tides. Second Reach. To sail through it and over the bar.

The best mark for crossing the bar, is to keep the bluff of Deep Water Point N.E. ½ E., or N. E. ¾ E., on with the middle of a small hill, having a clump of trees upon it, which is the northernmost of *four* small hills: when the Bar Creek is fairly open, bearing E. by S. ½ S. or E. S. E., you will be on the top of the bar, which is about a cable's length across. If at anchor to the northward of the bar, the best time to weigh is about 2½ hours flood, which will give time sufficient to kedge or warp over it before high water, should circumstances render that necessary. The flood runs through the middle of the strait until it is nearly half-ebb on the shore, and this is generally the case in most parts of Malacca Strait.

After passing the bar, the water will deepen gradually to 5 fathoms abreast the second creek, and the least water will be 5½ or 6 fathoms, in steering from thence rather more than a cable's length off the eastern shore. The western shore must be avoided until the Third Reach is entered, for it is fronted by a shoal of hard ground, stretching from the large opening to seaward a considerable way into the strait.

There is a creek on the eastern shore, bearing about E. ½ S. from the south point of the opening to seaward, having on its south side, about a cable's length from the entrance, and nearly the same distance inland, some wells of fresh water, which can only be procured by carrying it in buckets to the boats. The point on the north side the entrance of this creek is called Ann Grab Point, from a grab of that name having been wrecked on the flat that projects a little way off it; this point ought therefore to have a berth of 1½ or 1¼ cable's length in passing. A Portuguese ship was lost farther to

the northward; and in 1806, the ship Strathspey got aground, was attacked and captured by the Malay Pirates, and carried to Salangore.*

Third Reach.

THIRD, or SOUTH REACH, extends S.W. by S. and S.W., about 2 leagues or more; having entered it a little way, you may approach either side in working, to any distance, for both shores are steep to: the water will deepen from 8 or 9 to 12 and 14 fathoms, as the southern entrance of the strait is approached, and will shoal again gradually to $5\frac{1}{2}$ or 6 fathoms; there will be no less water, if the point on the S. E. side be not borrowed upon too closely: this point is fronted by a projecting flat. The best track is to steer out in mid-channel between the points which form the entrance, or rather nearest the western shore; then S. S.W. to South, according to the tide, until the water deepens to 10 or 12 fathoms; and after edging away about S. S. E., and deepening to 15 or 16 fathoms, a S. E. course may be steered along the coast for Cape Rachado, keeping from 4 to 8 miles off the land.

To enter Callam Strait from the southward.

TO ENTER CALLAM STRAIT from the southward, having brought Parcelar Hill to bear about East, the entrance, of Loomat Strait, called also False Strait, will be discerned; to the N. Westward of which, about 3 miles distant, lies the mouth of Callam Strait. Caution is requisite in steering for the entrance of the strait, as the ebb tide is likely to carry you towards the sand-banks which project a great way to the westward of the western entrance point, and are nearly dry in some places at low water, 2 or 3 miles distant from that point; steer therefore for the point on the east side the entrance, and when near it keep in mid-channel, sailing into the mouth of the strait: the best time to enter it is about high water. After the shoal fronting the east point is rounded, continue to keep nearer to the eastern shore than mid-channel, to prevent being horsed by the ebb into the opening to the northward, a little inside of the strait on the west side, which is barred up with sands. Having passed, and shut in this opening, the preceding directions for sailing to the southward may be attended to, in proceeding through the strait to the N. E. and northward.

FROM PARCELAR HILL TO CAPE RACHADO, AND THENCE TO MALACCA.

Channel between Parcelar Hill and Cape Rachado.

THE DANGERS contiguous to the channel betwixt Parcelar Hill and Cape Rachado render the navigation of this part of the strait rather difficult in the night to persons unacquainted, for the soundings being in some places irregular, are not a sufficient guide; the dangers on each side, must therefore be described, prior to giving directions for sailing through the channel.

Coast and bank fronting that hill.

From the point on the east side the entrance of Loomat Strait, the land takes an easterly direction towards Parcelar Hill, then turns gradually round S. Easterly to Parcelar Point, which is S. S. E. 10 or 11 miles distant from the hill. A bight or concavity fronting Parcelar Hill is thereby formed betwixt these points, occupied by a shoal steep bank stretching from point to point: this bank is composed of fine, hard, black sand, like steel filings, and ought to be approached with great caution, being steep to. At a considerable distance outside of it 17 and 18 fathoms are found in some

* This strait was *formerly* much used by ships of moderate size, but it ought not *now* to be recommended, for it has of late years been often infested by piratical proas, which lurk in the creeks, ready to surprise small vessels, or ships which have the misfortune to get aground. The preference ought certainly to be given to the channel between the Arroas and Parcelar Hill; for although the passage by it may sometimes be less speedy than that through the Strait of Callam, this is of little consequence, when compared with its greater safety.

places, and also 16 or 17 fathoms close to its outer edge, from whence the water shoals suddenly to 3 and 2½ fathoms.

The Anna, in June, 1803, standing in towards Parcelar Hill with the wind at S. E., had several casts of 17 fathoms, with the large lead kept going; next cast she had 5 fathoms, and although the helm was instantly put down, the ship grounded in stays, being then high water. In the night, she had only 12 feet at low water, and 18 feet at high water; but on the following day, the tide rose to 21 feet before high water, she was hove off the bank by the stream anchor, previously carried out with a whole cable. When aground, the centre of Parcelar Hill bore N. 31° E., northern extreme of the land N. 51° W., and Parcelar Point, or the southern extreme, S. 49° E., off shore about 2½ miles.*

The tides were then at a medium between springs and neaps, and flowed only 6 feet perpendicularly in the night, but had flowed to 9 feet a considerable time before high water during the day; it therefore appears, that here, as on the coasts of Sinde, Guzarat, Concan, and other parts to the northward of the equator, the principal or highest tides are *in the day*, during the S.W. monsoon, when the sun is near the northern tropic; and the highest tides at these places happen *in the night* during the N. E. monsoon, when the sun is in the southern hemisphere. The perpendicular rise and fall of the tides on the sands, and betwixt Pulo Callam and Cape Rachado, is from 11 to 14 or 15 feet on high springs, and their velocity is then about 2 to 2½ miles per hour, between Parcelar Hill and the cape; high water at 5½ to 6 hours in the offing, at full and change of moon. The tides set fair through the channel, the flood about S. E. by E. and the ebb N.W. by W., but near the South Sands the ebb sets about N.W.: close to Cape Rachado, the tides are strongest, and run with eddies during the springs; and upon the South Sands, Captain Ross could not observe any slack water, as the tides appeared to veer all ronnd the compass. Tides.

PARCELAR POINT, in lat. 2° 42′ N., being round, and similar to the adjacent low coast, is not easily distinguished; but a little eastward from it there is a white breach or patch on the shore, which may be discerned when the point is bearing to the northward, and the observer not too far distant from the land.† This point may be approached occasionally within 2 miles, for the bank that occupies the bight abreast of Parcelar Hill converges towards the shore near the point, having 20 fathoms water a little way from its edge. Although Captain Ross could not perceive any dangers between Parcelar Point and Bambek Shoal, lying 10 or 12 miles to the S. E., excepting the shoal bank that lines the shore to the distance of about a mile in some places; yet, several ships have grounded not far to the eastward of Parcelar Point, probably on the edge of the shore bank. Parcelar Point.

The Shore Bank, or Shoal Spits, not far eastward from Parcelar Point, have 20 and 21 fathoms near the outer edge; but in some parts regular soundings from 12 to 9 or 8 fathoms, may be found on the outer edge of the Shore Bank; although the sound-

* This part of the coast, fronting Parcelar Hill, having in the old charts been represented *convex* instead of *concave*, towards the sea, with good soundings close to the shore, many navigators have thereby been led into error, and have run their ships aground on the Shore Bank. The Mysore grounded on it in 1802, and was with some difficulty hove off, after throwing her lumber, some guns, &c., overboard. With Parcelar Hill N. ½ W. the Gunjavar's helm was put down in 11 fathoms, and she grounded in stays. The Hampshire, of Bombay, a Portuguese ship belonging to Macao, and several other ships, have also grounded upon this bank.

† There is also a white patch, about 5 miles more to the eastward, and another near the extreme of a point about 3 leagues N. N. Westward from Cape Rachado, with a small island to the N.Westward of it, and others to the S. Eastward.

ings, in general, are not a safe guide in standing near any of these banks. When within 3 or 3½ leagues of Cape Rachado, or a little nearer to it than to Parcelar Point, you are clear to the southward of Bambek Shoal, which is the principal danger in the extensive bight between them, and bounds the east side of the channel.

Extracts from the journals of the Sarah, Gunjavar, and other ships.

Not far to the southward of Parcelar Point, the Sarah, aground in 2½ fathoms, had 10 fathoms on the opposite side of the ship, with Parcelar Hill bearing N. 30° W.

The Gunjavar, after rounding Cape Rachado with a westerly wind, lay up N. N.W. in soundings from 20 to 13 fathoms, and got between Bambek Shoal and the shore. She tacked in 15 fathoms, steered West 2 miles close hauled, in 9 to 15 fathoms, soft, then 12 fathoms, hard ground; next cast 4 fathoms, and grounded on the inner edge of the shoal, Cape Rachado bearing S.E. ½ E. 4½ or 5 leagues, Parcelar Point, the northern extreme of the land, N.W. by W., off shore 3 or 4 miles. The kedge anchor was laid out; she was then hove off, and anchored in 8 fathoms, as night was approaching; next morning she weighed, and stood to the south-eastward and southward, round the eastern extremity of the shoal.

The Portuguese ship Carmo, aground in 11 feet water, had Cape Rachado bearing S. E. ¾ E., and Parcelar Hill about N.W. ¼ N.

The ship La Paix, bound from China to Bengal, was wrecked on Bambek Shoal, November 28th, 1805. At 5 P.M. she tacked in 19 fathoms, and after running 2 miles S.W. by W., struck, and grounded on the shoal in 2½ fathoms, Cape Rachado bearing S.E. by E., Parcelar Point N.W. by W., the Hill N. 41° W., off shore 4 miles. Found on sounding all round that they were encompassed by rocks and shoals, and having only 10 feet, rocky bottom, under the bow, she soon bilged with the swell, and was totally lost. Other ships have been wrecked on this shoal, proving the danger of borrowing towards it; but it will be avoided, by not bringing Cape Rachado to the southward of S. 60° E., nor Parcelar Point to the westward of N. 43° W. The Caroline, bound from Bengal to Canton River, in 1816, was wrecked on Bambek Shoal, with Cape Rachado bearing E. 35° S., Parcelar Point W. 36° N., and Parcelar Hill W. 43° N.

BAMBEK SHOAL (the centre) lies in lat. 2° 33½′ N., distant 14 miles from Parcelar Point, the same from Cape Rachado, and in a *transit* line between these points, off shore 3 or 3¼ miles, having irregular soundings from 6 to 20 and 26 fathoms between it and the main. This shoal extends W. N.W. and E. S. E. nearly 2 miles, and is rocky and dangerous, having only 1½ to 2 and 2½ fathoms water over he rocks, deepening to 7 or 8 fathoms, hard ground, at each of the two extremities, where it extends about half a mile farther than the dangerous part mentioned above. Near this shoal, on the outside, the depths are from 10 or 12 to 17 or 19 fathoms, irregular; consequently, the soundings do not afford a safe guide in the approach to this danger.

About 3 miles East from the centre of Rambek Shoal is the N.W. extremity of a long spit, which extends nearly to Cape Rachado, fronting the shore at from 1½ to 2½ or 3 miles' distance. It has only 2, 1½, and half a fathom on it in some places, and 6 or 8 fathoms on other parts near Pulo Arram, with 8 and 10 or 12 fathoms inside, close to Cape Rachado, and also close to the shore, about 1½ miles within the Cape. The depths near this long narrow spit on the outside are usually 10, 11, or 12 fathoms, increasing to 20 fathoms or upwards, at 2 or 2½ miles' distance.

This part of the channel betwixt Bambek Shoal and the easternmost patches of the South Sands requires great care by ships passing through it in the night, as the sound-

ings are not a sufficient guide, although the water generally deepens to 35, 38, or 40 fathoms, when within a few miles of these easternmost patches, and shoals again to 30 or 25 fathoms near their edges, or in some places to 20 and 17 fathoms; but there are 30 and 31 fathoms within a mile of the easternmost patch, on the N. and N. E. sides, which patch forms the projecting extremity of these sands, bounding the channel to the South and westward, and it ought never to be approached by any ship, being steep to, and very dangerous.

The tides run strong and are very irregular among and contiguous to the South Sands, apparently setting all round the compass, without any perceptible slack water on the springs.

CAPE RACHADO, or TANJONG TUAN, in lat. 2° 26′ N.,* lon. 101° 51′ E., or 24 miles West from Malacca by chronometer, and bearing from Parcelar Point S. E. by E. about 27 miles, is a steep bluff headland, covered with trees, discernible at the distance of 7 leagues; it is just visible from the poop of a large ship, when she is a little to the southward of Parcelar Point. When first seen, in coming from westward, it appears like an island; the adjacent coast, and the neck of land that joins it to the cape, being much lower than the cape itself, are not so soon perceived; and the whole of the coast that forms the bight between Parcelar Point and Cape Rachado has a similar aspect, rather low and woody, with some small rivers. There is an islet or rock close to the cape, and a bay on each side, that to the N.W. being the largest, in which Pulo Arram and another small island lie near the shore, Pulo Arram being that nearest to the cape; but the coast which forms this bay should not be approached nearer than 3 or 4 miles, on account of the long spit that fronts it, already described. At 2 miles' distance from the cape, the depths are from 10 to 24 and 28 fathoms; and about 3 or 4 miles off it, from 15 to 22 fathoms, irregular at times: from this position, the low woody coast of Sumatra may be seen from the deck, the strait being here more contracted than in any other part to the northward of Malacca. Cape Rachado.

HAVING proceeded through the EAST-AND-WEST CHANNEL, or through Callam Strait, do not in working stand above $3\frac{1}{2}$, or at most 4 leagues off the land; nor above 3 leagues off it, when Parcelar Hill bears between N. and N.N.W. You may borrow occasionally, within $1\frac{1}{2}$ or 2 miles of the land to the westward of Parcelar Hill, or tack in 13 fathoms when the hill bears between E. by S. and E. by N.; but the shoal that stretches along the concavity of the land abreast of Parcelar Hill projects about $2\frac{1}{2}$ miles to seaward, and being steep to, on the outer edge, should not be approached under 17 fathoms. Close to its outer edge, the depths are 16 and 17 fathoms, and nearly the same depths, 17, 18, and 19 fathoms, are found at a considerable distance outside of it in some places. About 3 or 4 miles outside the edge of the Shore Bank there is a *long, narrow* bank in the fair channel, with 13, 14, and 15 fathoms water on it, which might in the night be mistaken for the edge of the former. The north end of this narrow bank bears about W. by S. from Parcelar Hill, and it extends parallel to the coast till nearly abreast of Parcelar Point; with the hill bearing from E. by N. to N. N. E., the depths on it are 13 to 16 fathoms, and on its southern part, 18 to 21 fathoms. The soundings inside this bank are mostly 19 and 20 fathoms near it, shoaling to 17 fathoms close to the edge of the Shore Bank, but not always regular: for around Parcelar Point there are 20 and 21 fathoms very near the Shore Bank, the same depth on the southern extremity of the Channel Bank, 20 to 24 Passage from Parcelar Hill to Cape Rachado.

* Captain Ross places it in lat. 2° 25′ N., lon. 101° $50\frac{1}{2}$′ E.

fathoms between them, and 26 to 30 fathoms off the south end of the Channel Bank, about 3 or 4 miles to the S. S.W. of Parcelar Point.

To avoid all the dangers fronting the shore, betwixt Parcelar Hill and Cape Rachado, do not come within a *direct line* joining the two extremes of the land, in passing the bight off Parcelar Hill; nor bring Parcelar Point, the southern extreme of the land, to the southward of S. 60° E., to keep clear of the edge of the Shoal Bank in front of the bight to the N. Westward of that point. Do not approach Parcelar Point nearer than 2 miles, or rather give it a berth of 3 or 4 miles in passing. When Cape Rachado is seen, keep to the eastward of S. E. by E. $\frac{1}{4}$ E., and do not bring Parcelar Point, the north extreme, to the westward of N.W. by W. in passing the extensive bight between them; for these bearings will not lead you far outside of Bambek Shoal.

Cape Rachado E. S. E. is a fair mid-channel bearing throughout; when working, it may be brought to S. E. by E. $\frac{1}{2}$ E., S. E. by E. $\frac{1}{4}$ E., in standing towards the shoals in the bight; and to E. by S. $\frac{1}{2}$ S., in standing towards the patches or pyramids on the eastern part of the South Sands; but as the channel betwixt these and Bambek Shoal is only about 3 leagues wide, it would be dangerous, in traversing, to exceed those bearings of the cape, when it *appears* like an island. When it is approached within $3\frac{1}{2}$ or 4 leagues, and the low neck of land that joins it to the coast is seen considerably elevated from the deck, the channel becomes wider, and may then, *occasionally*, be traversed with the cape bearing from S. E. by E. to E. $\frac{1}{2}$ S.

From abreast of Parcelar Point, in the night, at 4 or 5 miles' distance, steer S. E. by E. for Cape Rachado, which is the course from point to point: the soundings in the fair track will be generally 25 to 27 fathoms; from 33 to 40 fathoms will be near the pyramids of the South Sands, and with 17 or 18 fathoms when abreast the shoals in the bight, indicates being much nearer to them than to the South Sands. This may be useful as a general remark, but the soundings are often irregular in the channel; for a little to the southward of Parcelar Point, there are 30 fathoms within 2 miles of the Shore Bank, 20 fathoms close to it, and from 10 to 14 fathoms contiguous to Bambek Shoal. There are also some small banks in the channel, having from 11 to 15 fathoms water on them, but these are few, and generally on the shore side of the channel. Particular care must be taken not to deepen above 36 or 38 fathoms towards the pyramids that form the eastern extremity of the South Sands, for the depths increase near them on the N. E. side to 38, 40, or 44 fathoms, then decrease suddenly to 30, 20, 10, and 2 or $1\frac{1}{2}$ fathoms upon them. If the lead be kept going, the deep soundings in the outer part of the channel are a certain indication of the proximity of this part of the South Sands, when passing in the night. To the N. Westward, opposite Parcelar Hill, the depths near the edges of the South Sands are not so great as near the easternmost part. When Cape Rachado is brought to bear N. E. there is *thought* to be no danger, for after passing the cape a little way, the strait is considered to be safe from side to side, excepting a bank about 6 leagues to the S. Westward of the Water Islands, on which the Milford grounded. It is, however, advisable, not to exceed the distance of 4 leagues from the Malay coast, in sailing from Cape Rachado to Malacca; and the cape may be passed at the distance of from 1 to 6 or 7 miles, as circumstances require. About 2 leagues to the S. Eastward of the cape, there is a small bank in the channel, with 10 and 12 fathoms on it; and the depths in the offing are irregular, from 16 to 25 fathoms betwixt Cape Rachado and Tanjong Clin; but farther eastward they become more regular.*

* Captain M. Quin, of H. M. S. Raleigh, found a shoal patch about mid-way between the north point of Pulo Roupat and Tanjong Clin; he gives the following bearings for it:—Cape Rachado, N. $\frac{3}{4}$ W.; Mount Ophin

TANJONG CLIN, or Peer Punjah, about 5 miles to the N.W. of Fisher's Island, and $6\frac{1}{2}$ or 7 leagues S. E. by E. from Cape Rachado, is known by two or three trees on its extremity more elevated than the others near the sea. The coast betwixt it and Cape Rachado forms a bight, and being rocky in several parts, with 17 and 18 fathoms not far from the shore, should not be approached nearer than $2\frac{1}{2}$ or 3 miles, for the soundings, not being always regular, do not afford a sufficient guide. About 6 or 7 miles east of Cape Rachado is the entrance of Lenque or Lengey River, a considerable stream, navigable by small vessels; but the river and the bight between it and Cape Rachado is fronted by detached rocks. *Tanjong Clin, and the adjoining coast.*

The coast about 2 leagues to the N.W. of Tanjong Clin is lined by straggling rocks under water, projecting $1\frac{1}{2}$ or 2 miles from the shore, with 10 and 11 fathoms between some of them; near and outside of these there is a large rock always above water, called DIANA ROCK, from the country ship of this name having been wrecked on it; it is distant $1\frac{1}{2}$ or 2 miles from the shore, having near it 17, 18, and 19 fathoms, irregular soundings. *Diana Rock.*

The snow Forth stood in and let go her anchor in 12 fathoms during the night, when near high water, and after tending to the ebb, got fast aground upon one of these sunken rocks: this shews the impropriety of borrowing too close to the shore hereabout in the night.

FISHER ISLAND, bounding the N.W. side of Malacca Road, is low and level, encompassed, and joined to the main by foul ground; it ought not to be approached under 15 fathoms towards the south end, these depths being near the edge of the shoal. With the extremes of the island bearing from N. by W. to N.N.W., body of it N. by W. $\frac{1}{2}$ W., distant half a mile, there is a CIRCULAR SHOAL, about 10 or 12 fathoms in extent, having 18 feet on it at low water spring tides, the bottom sand and stones, intermixed with mud.* To avoid this shoal and other rocks near the S. E. side of Fisher Island, do not stand nearer to the island than 1 mile; and tack from it in 15 fathoms, with the lead kept briskly going, when working into Malacca Road during the night. The coast about Tanjong Clin, and from thence to Malacca Road, may be approached to 14 or 15 fathoms, but it would be imprudent to go under these depths in a large ship, particularly in the night. *Fisher Island.* *Shoal.*

In sailing from Cape Rachado towards Malacca, or the Water Islands, which bear from that cape about S. E. $\frac{1}{2}$ E., distant 12 leagues, keep from 3 to 6 or 7 miles off shore, in soundings from 16 to 20 fathoms, for they are not always regular; when well out in the offing, the depths in some parts increase to 24 or 26 fathoms, particularly opposite Tanjong Clin and Malacca. If not intending to stop here, steer a course to pass outside of the Water Islands, at any discretional distance; but if bound into Malacca Road, with the wind from the land, Fisher Island may be rounded within $1\frac{1}{2}$ miles. *From Cape Rachado to Malacca, or to the Water Islands.*

If working into MALACCA ROAD in the night, or approaching it from south- *Malacca Road.*

Peak, E. N. E.; north end of Pulo Roupat West; and south end of Pulo Roupat S.S.W. $\frac{3}{4}$ W.; in lat. 2° 10′ N., lon. 101° 54′ E. The shoal, he says, appears to be $1\frac{1}{2}$ miles in length N. N.W. and S. S. E.—(*Naut. Mag. for* 1838, *p.* 793.)

* The Sarah, borrowing too close, shoaled from 10 to 5 fathoms at a cast; other ships, approaching still nearer to Fisher Island, have grounded on the shoal; and in 1789, I saw a snow, bound from Manilla to Madras, run aground upon the spit which projects from Fisher Island, by borrowing too close after weighing from Malacca Road. There is a narrow channel between this spit and the Circular Shoal, through which the Terpsichore frigate passed in 1803.

ward, when round the Water Islands, do not haul in too close to the rocky flat, called PANJANG REEF, which projects about 2 miles from the shore, and extends along it to Pulo Java or Red Island, near Malacca.

Panjang Reef. The church and flagstaff on the hill bear from the west end of Panjang Reef N. $\frac{1}{2}$ E. distant $1\frac{1}{2}$ miles, and from its east end N. N.W. $\frac{1}{4}$ W. distant $3\frac{1}{2}$ miles: within 2 cables' lengths of its southern edge, there are 18 and 19 fathoms water, and 15 fathoms close to the rocks; the lead is therefore no guide if you go under 18 or 19 fathoms towards the S. Eastern edge of the reef. The Cartier and Asia, returning from China in different seasons, got upon this reef by hauling up too soon for the road, during the night, where they lay one tide in a very dangerous situation; the Cartier had $4\frac{1}{2}$ fathoms under her stern at low water, with the rocks appearing above water close to her stem. Several other ships have grounded on this reef in the night; the Shah Byramgore barely escaped, by anchoring close to the rocks.*

Anchorage. From 20 fathoms in the offing, the depths decrease regularly over a bottom of soft mud towards the road, where the best anchorage is under 10 fathoms, with the church on the hill N. E. by E., Fisher Island N.W. $\frac{1}{2}$ W., and the tuft of trees East, off the town about $1\frac{1}{2}$ or 2 miles. When the depth is more than 10 fathoms, the bottom is generally stiff clay, requiring good cables to purchase the anchors, after they are seated in the ground; but under 10 fathoms the bottom is soft mud, and continues so close to the shore. Large ships may anchor in from 7 to 9 fathoms; and small ones in 6, 5, or 4 fathoms at discretion, there being no danger if they should happen to ground on the soft mud bank that fronts the town. Ships should not anchor on the east side of the road near Red Island, for the bottom is foul and rocky, the depth decreasing suddenly from 8 to 3 fathoms on the northern extremity of Panjang Reef. During the S.W. monsoon, sudden hard squalls frequently blow into the road from the Sumatra side in the night, accompanied with much thunder, lightning, and rain; several ships have been damaged here by lightning at various times. It is high water in the road at $9\frac{1}{4}$ hours, on full and change of moon; the tides of flood and ebb continue to run through the road 2 hours after high and low water on the ground; and boats cannot get into the river after half-ebb. The rise of tide is from 8 to 10 feet on the springs, and it runs about 2 miles per hour. The sea worm is very destructive in this road to vessels or boats which have not copper sheathing.

Squalls.

Tides.

Malacca Fort. MALACCA FORT, or the Church on the Hill, is in lat. 2° 12′ N., lon. 102° 15′ E., by mean of a series of lunar observations taken by different navigators, corroborated by chronometers from Penang. This hill, on which the church is built, and where the colours are displayed, stands in the centre of the fort, fronting the sea on the south side the river; and on its south side the town lines the sea front, there being a draw-bridge of communication. The lighthouse is 146 feet above the level of the sea, from which Tanjong Clin bears W. 8° N., outer extreme of Fisher Island W. 12° N. to W. 16° N., small rocky reef off the west end of Red Island S. 3° W., West extreme of Red Island S. 2° E., body of the Outer Water Island S. 31° E., anchorage in the Road from S. 46° W. to S. 62° W.

Inland country. The country a few leagues inland from Malacca is formed of undulating hills, moderately elevated, called Malacca Hills, and $7\frac{1}{2}$ leagues E. by N. $\frac{1}{2}$ N. from it stands the high mountain Goonong Ledang, called also Queen Mount, or Mount Ophir; but the

* H. M. S. Trident, bearing Admiral Rainier's flag, going into the road in a dark night, with a strong breeze, saw the breakers on the reef, and brought up with two anchors within a cable's length of the reef in 18 fathoms. A lighthouse has been erected at Malacca, to guide ships into the road clear of Panjang Reef.

coast and land adjacent to the town is low, and all the country is mostly covered with wood.*

Water and supplies.

Malacca is convenient for ships requiring water and refreshments. Water is obtained on application to the master attendant; and fish, yams, sago, and a variety of excellent fruits, may be procured at moderate prices. Buffaloes, a few hogs, and some poultry, may also be obtained, and grain imported from Java, Sumatra, or Bengal. Dammer for caulking is an article of trade here, and poon spars for masts brought over from Siak River, on the opposite coast of Sumatra.

Boats may proceed into the river soon after a quarter flood; they should steer for the Church on the Hill, keeping it rather on the starboard bow, and when the bar is approached, the channel may be discovered by the stakes at the entrance of the river.

FROM MALACCA TO SINGAPORE STRAIT.

Water Islands.

THE WATER ISLANDS, or FOUR BROTHERS, lying from 6 to 10 miles S. Eastward of Malacca Road, are high, small, round islands, covered with trees, and take their first name from a fifth, or larger one, nearer to the coast, which has excellent fresh water on its eastern side. As the flood tide sets along the coast from Malacca Road towards these islands, ships leaving the road should steer well out to seaward, in order to round the outer island at a convenient distance; close to this island there are 17 or 18 fathoms, and 20 fathoms about a mile off.

The passage for ships, is outside these islands, but Captain J. Lindsay's examination of this place proves that small ships may *occasionally* pass with safety between some of them, if any advantage is to be gained by it. Inside the outer island, and also betwixt the westernmost and the others, the passage is safe, and the depths 18 and 19 fathoms, soft mud.

Channels between them.

The widest channel is between the large island and the Four Brothers, were it not for a rock or reef under water, nearly in mid-channel. When upon it in 8 feet at low water, the west end of the large Water Island bore N. N.W $\frac{1}{2}$ W., and Malacca church open to the westward of it 1° 29$\frac{1}{2}$′ by sextant, the N. E. end of the Large Island N. $\frac{1}{2}$ W., the westernmost Brother W. S.W., and the small island or point to the eastward of the southernmost Brother, just appearing over the rocky point of the east end of the Middle Brother, bearing then S. $\frac{1}{2}$ E. There is a passage on either side this rock, in 18 and 19 fathoms water; and it may be avoided, by keeping pretty close either to the Middle Brother or the Large Island; for the rock is about a mile from the S. E. end of the latter, and nearly the same distance from the Middle Brother. After passing through this channel, the depth will decrease to 10 or 12 fathoms on the mud bank fronting the coast to the eastward of the islands, on which there is no danger.

Vessels coming from eastward, to pass through this channel, may keep the south end of the Large Water Island N.W., or more westerly, until they shut in the southernmost Brother with the two others; or they may steer for the N. Easternmost Brother, and pass it half a mile distant, not bringing the westernmost Brother to the southward of S.W. by W. $\frac{1}{2}$ W. until past the Middle Brother, which may be approached within 100 yards without danger.

* Being situated near the equator, on the side of a strait, liable to calms, with offensive mud banks, which dry every tide, close to the houses, and the low country around being almost an impenetrable forest, from which noxious vapours and exhalations arise; it might naturally be expected that Malacca would be an unhealthy place. It is, however, the most healthy place known in India, so near to the equator.

The large Water Island has several springs of good water, some of them in the form of wells, enclosed with bricks, where excellent water may be had. There is anchorage in 10 fathoms, mud, about half or three-quarters of a mile from the beach, with the south end of the island bearing N.W. by W. ½ W., and Mount Mora E. by S. Capt. Vassall, of H. M. S. Harrier, says that a ship may receive as much water here as she requires, by keeping her boats constantly at work, excepting near the time of low tide, when the reefs which surround the island are dry. Small vessels ought, however, to be on their guard against the treachery of piratical proas, which lurk here at times, to procure a supply of water, and to assault defenceless vessels.

From the Outer Water Island to the S. Eastward.

OUTER WATER ISLAND bears S. E. from Malacca Road, distant 9 or 10 miles; in passing it with a working wind, do not stand above 4 leagues to the S. Westward, on account of the Three Fathoms Bank on which the Milford grounded; this bank is thought to lie about 6 leagues S.W. from these islands; a few miles farther to the north-westward we shoaled suddenly in the Anna, from 28 to 8 fathoms, and tacked. After rounding the Water Islands, the coast may be approached to 12 or 13 fathoms in working, until past Mount Mora; the Sumatra coast may also be approached occasionally to 14 fathoms in this part of the strait; but it is best to keep nearest the Malay side, to prevent getting outside the Long Bank in the middle of the strait, to the southward of Mount Formosa.

Mount Moar, and contiguous coast.

MOUNT MOAR, or MORA, in lat. 1° 59′ N., bearing E. by S. about 8 leagues from the Outer Water Island, is an isolated hill near the sea, covered with wood, and just visible from Malacca Road. Tanjong Tor, the contiguous point of land, bears about E. S. E. from the Outer Water Island, and, with the whole of the coast in this space, is low level land, having several small rivers falling into the sea. The coast from thence to Formosa River continues low and woody, and the whole of the opposite land of Sumatra is low, and covered with trees.

Mount Formosa.

MOUNT FORMOSA, in lat. 1° 49′ N., lon. 102° 55′ E., or 40 miles East from Malacca by chronometers, is the highest summit of a group of undulating mountains near the sea, and is just discernible from the Water Islands. The western end of this mount forms the bluff point of land, called Point Sizan, on the east side the entrance of Formosa River, which extends a considerable way into the country. Abreast this river there is an extensive shoal, called FORMOSA BANK, on which the Murad-bux, in 1800, shoaled to 2½ fathoms. The Asia, steering along shore to the S. Eastward in 12 and 14 fathoms with the land wind, shoaled suddenly, and grounded on this bank, in June, 1803, where she lay one tide. When aground in 2½ fathoms at low water, Formosa Peak bore N. E. by E. ½ E., entrance of Formosa River N. E. ¼ E., Mount Mora N.W. by N., western extreme of the land N.W. by W., off Formosa River 5 or 6 miles; this appears to be the shoalest part of the bank, and consists of black sand. This dangerous part of the bank seems to be connected with Point Sizan by a shoal spit, from which it is distant about 4 miles, and nearly equally distant from the point on the other side of Formosa River. From the shoalest part of the bank, a spit extends a great way N. Westward, with 5, 6, and 7 fathoms water, and probably reaches the shore a little eastward of Tanjong Tor, or about S. S. E. from Mount Mora. Betwixt the bank and the coast there are regular soundings, 10 and 12 fathoms, soft ground; when the Asia floated, she was drifted inside the bank by a squall, and steered 3 miles to the N.W. along its inner edge, in 8 and 9 fathoms; then crossed it

(Margin: Formosa Bank.)

in 5 fathoms, with the western extreme bearing N.W. ½ W., Mount Mora N.W. by N., Mount Formosa E. by N. ½ N., and a little hill near the shore with a peaked summit N. N. E. ½ E. On the outer edge of the bank the depths decrease suddenly; but the lead, if kept *briskly* going, will indicate its proximity, and give warning to tack.

About 5 miles W. N. W. from Formosa Bank there is a *small bank* of 10 to 8 fathoms, having 18 and 17 fathoms between it and the shore. The Antelope had two casts of 9 fathoms, sand, on this bank, with Mount Formosa bearing E. ¼ N., Mount Mora N. by W., bluff end of Formosa Hills forming Point Sizan E. by N., off shore about 8 miles, and in crossing towards the shore had 18 fathoms. From Mount Mora about S.W., and 3½ or 4 leagues off the Sumatra shore, we shoaled in the Anna from 25 to 11 fathoms upon a bank, and deepened regularly when over it to 23 fathoms; then shoaled again to 11 fathoms, where we tacked, about 4 miles from the coast of Sumatra. These small banks in the fair channel here, and in other parts of the strait, with from 9 to 14 fathoms on them, may sometimes cause anxiety to persons unacquainted, when not certain of their position in the night. Other banks not dangerous.

PULO PISANG, in lat. 1° 28′ N., and 59 miles East from Malacca, by chronometer, is of middling height, covered with wood, and composed of three hummocks; the central part is of round form, and being rather more elevated than the other hummocks, may be seen 8 or 9 leagues. The island lies about 4 or 5 miles from the coast, and is connected with it by an extensive mud bank, over which there is said to be a channel with 3 or 4 fathoms water, fit for small vessels. Close to the east side of Pulo Pisang there are two round islets, and two others, of similar aspect, contiguous to its western side. On the largest of these fresh water may be sometimes procured. It is high water here at 10½ hours on full and change of moon. Pulo Pisang. Tides.

From the brow of the western point of Pulo Pisang, Captain Ross observed the peak of Mount Formosa to bear N. 43° 41′ W., by theodolite, centre of Little Pisang N. 82° 4′ W., Peak of the Great Carimon S. 19° E., and the other peak of ditto S. 27° 25′ E.

The land fronting the sea, betwixt Mount Formosa and Pulo Pisang, is low and woody, excepting Battoo Baloo, a small round mount near the sea, rather more than half-way between Formosa and Pisang.

The coast from Mount Formosa to Pulo Pisang, and from thence to Pulo Cocob, is lined by a shoal mud bank, projecting 2 and 3 miles off shore in some places, and 2 leagues to the N.W. of Pisang; it is thought to extend 3 or 4 miles from the coast, leaving a concave space of good soundings nearer the land, which is steep to, on the N.W. and west sides. Captain Rous, of H. M. S. Rainbow, observes, however, that the Malay coast, between Pulo Pisang and Formosa Point, may be approached within 2 miles of the beach, anywhere to the northward of Pulo Pisang, as the mud bank does not extend so far off from the land as hitherto represented. On the edge of this shore bank the depths decrease suddenly from 10 or 9 to 6, 5, and 4 fathoms, to the N.W. of Pisang; and from 12 or 11 to 4, 3, and 2 fathoms to the S. Eastward of that island, being here more steep and dangerous. The coast and its contiguous mud bank.

It may be observed, as a general rule, that on the edges of the shore banks throughout the strait the depths decrease suddenly; and also on the edges of those in the offing.

THE PISANG BANKS, exclusive of that lining the coast last mentioned, are Pisang Banks.

Fair Channel Bank.

three in number. The first, called the FAIR CHANNEL BANK, extends parallel to the coast, in the direction of the channel, and lies a little nearer to the shore bank than to the Long Middle Bank, which lies outside it. Mount Formosa bears about North from its northern extremity, and Pulo Pisang about North from its southern extreme; the depths on it are generally from 8 to 11 fathoms, and the least water known is 6½ to 7 fathoms in two places near its south end, with Pulo Pisang bearing respectively E. by N. and N. E. by N. from 4 to 5 miles. There appear to be some small gaps in this bank, as I have crossed over it with the lead going, and had not any shoal soundings; but these gaps are very narrow, for ships making long tacks across the channel generally get soundings from 8 to 11 or 12 fathoms in crossing over the bank, which is a good guide in the night. The depths betwixt this bank and the shore bank are 13 to 20 fathoms; and between it and the Long Middle Bank, generally from 16 to 24 fathoms, but not always regular.

Long Middle Bank.

LONG MIDDLE BANK, distant 6 or 7 miles outside the Fair Channel Bank, and extending parallel to it and to the coast, lies nearly in mid-strait between the Malay and Sumatra shores. From its N. Western extremity, which is the shoalest part, Mount Formosa bears N. by E. ½ E., and Pulo Pisang E. ½ S. to E. ¾ S.; and from thence to the north end of the Great Carimon it is a continued narrow bank, having 3½ and 4 fathoms at low water on its N. Western extremity, 4 and 5 fathoms on its middle part, and 6½ to 8 fathoms on its S. Eastern part towards the Carimons. With Mount Formosa bearing N. by E. ½ E. and Pulo Pisang E. ¾ S., we anchored in 4½ fathoms, and the least water found, in sounding around with the boats, was 3½ fathoms at low water, soft ground.

The Dublin had 3½ and 3¾ fathoms at low water upon it, Mount Formosa bearing N. by E., which was the least water found, the bottom soft, excepting a cast or two of sand.

The Nottingham had three casts of 4½ fathoms, crossing over the bank, with Mount Formosa N. ½ W. and Pulo Pisang E. ¼ N., and as it was not far from high water at the time: the depth in this place is probably about 3¾ fathoms at low water.

This Long Middle Bank can hardly be considered dangerous, for it consists mostly of soft muddy bottom, with seldom less than 4 fathoms water on it; excepting the north-western part, where there are some patches of 3½ or 3¾ fathoms at low water, over a bottom of hard black sand mixed with mud. A ship drawing 21 or 22 feet water might probably touch at low tide on these patches, but this will seldom or never happen with proper care. In a ship drawing 20 and 21 feet water, I have frequently crossed over this bank in different parts without apprehending any danger. It is, however, best to keep in the proper channel, betwixt it and the Malay shore. Both it and the Fair Channel Bank are narrow, but of great length.

Sumatra Bank.

SUMATRA BANK, the third in number from that adjoining the Malay shore, lies to the S.W. of, and nearly parallel to, the Long Middle Bank, stretching about half-way from the Sumatra shore towards the Long Middle Bank.

Its western extreme, having depths from 3 to 4 fathoms, is in lat. 1° 27′ N., bearing about S.W. by S. from Mount Formosa, and distant 5 or 6 miles from the east side of Pulo Bucalisse, bearing E. by S. ½ S. from the N. E. point of that island, which forms the projecting part of the Sumatra side of the strait in this part.

In lat. 1° 23′ N., and bearing S. by W. to S. by W. ½ W. from Mount Formosa, there is a projecting part of the bank extending East and West several miles, with depths

from 2 to 4 fathoms. In lat. 1° 21′ N., about 4 or 5 miles farther eastward, and bearing South a little westerly from Mount Formosa, there is another shoal part, with only $1\frac{1}{2}$ and 2 fathoms water on it. These two shoal parts of the Sumatra Bank last mentioned lie nearest to the Long Middle Bank, being only 4 or 5 miles from it, making the channel betwixt these banks only 4 or $3\frac{1}{2}$ miles wide.

In 1787, the Locko grounded upon the Sumatra Bank in $2\frac{1}{2}$ fathoms at low water, sand and mud, with Mount Formosa bearing N. by E. 10 or 12 leagues, Pulo Pisang E. N. E. about 8 leagues, off the Sumatra shore about 3 leagues. Before grounding, she passed over a bank of 4 fathoms, with Mount Formosa bearing N. $\frac{1}{2}$ E. and Pulo Pisang E. N. E. When she floated, they steered N.E. with the boats sounding a-head, shoaled from 5 to $3\frac{3}{4}$ fathoms, and then deepened to 16 fathoms in the channel betwixt the Sumatra Bank and the Long Middle Bank.

To sail from the Water Islands to Pulo Pisang.

Pulo Pisang bears S. E. by E., 66 or 67 miles from the Outer Water Island; and when abreast the latter, at 1 to 3 or 4 miles' distance, that course will carry you about the same distance outside the bank that fronts Formosa River, if not affected by lateral tides. The flood sets generally fair through the strait from the Water Islands to the Carimons, and the ebb in the opposite direction, about 2 miles per hour on the springs. When Mount Formosa is brought to bear about N.E., keep within 3, or at most 4, leagues of the Malay coast, to prevent falling to the southward of the north end of the Long Middle Bank. If the weather is clear, and Pulo Pisang be discerned, keep it between E. by S. $\frac{1}{2}$ S. and S. E. by E. $\frac{1}{2}$ E., until Mount Formosa is brought to bear North, or N. by W., in working betwixt the north end of the Long Middle Bank and the coast.

To pass the Formosa Bank.

If a ship, in proceeding past Formosa Bank in the night, should, by giving it too wide a berth, get far out in the offing, and at day-light find herself to the southward of the Long Middle Bank, she may continue to sail along the outside of it: or if the wind be contrary, she may work to the S. Eastward betwixt it and the Sumatra Bank, there being a safe channel between them, with soundings of 16 to 19 fathoms, shoaling quick on the edge of either bank. It will be prudent to work nearest the edge of the Long Middle Bank, as the Sumatra Bank is not safe to work upon; and when Pulo Pisang is brought to bear about N.E. by E., she may cross over the Long Middle Bank; for on this part of it the depths are $5\frac{1}{2}$, 6, or 7 fathoms, in crossing over it to the eastward to regain the proper channel. Pulo Pisang may be brought to bear S. E. by E. in standing towards the edge of the bank that lines the coast betwixt it and Mount Formosa, excepting about 2 leagues to the N.W. of that island, where it forms an elbow, and should not be borrowed on so close; for there 5 fathoms are found on the verge of it, with Pulo Pisang bearing S.E. by E.; but when nearer Pisang, the outer islet may be brought to bear S. by E. or South. When Mount Formosa is brought to bear N. by W., Pulo Pisang may occasionally be brought to bear E. $\frac{1}{2}$ S., or East, in standing towards the Long Middle Bank. The channel is generally $3\frac{1}{2}$ to 4 leagues broad, and the soundings in crossing over the *Fair Channel Bank* will be a guide in working through the channel during the night; or you may stand into 10 or 12 fathoms on the edge of the Shore Bank, and off to 18 or 20 fathoms. In day-light, when abreast of Mount Formosa, and Pulo Pisang is visible, bearing E. S. E., or E. S. E. $\frac{1}{4}$ S., steer for it; either of these bearings will carry you nearly in mid-channel, between the Long Middle Bank and the shore. When Pulo Pisang draws near, its western side and the two islets off it, may be approached within half a mile, if thought proper, as they are bold close to, with 13 and 15 fathoms within a cable's length of them; and in standing off shore about $3\frac{1}{2}$ leagues from the island, you will be close to, or upon the S. E. part of the Long Middle Bank, where on it are 6 or $6\frac{1}{2}$ fathoms. In working, when pass-

ing Pulo Pisang, tack about $1\frac{1}{2}$ or 2 miles from it, in 14 to 17 fathoms, and do not stand off from it above 3 leagues.

Pulo Cocob, and adjacent coast.

PULO COCOB, bearing from Pulo Pisang about S.E. $\frac{1}{4}$ E., distant $4\frac{1}{2}$ or 5 leagues, is a low flat island, close to the Malay shore, which may be known by the trees on its N.W. side being of a bright green colour, low, and resembling grass; but on its south end they are tall, erect poon trees, like those on the adjoining coast, from which it is perceived to be separated by a creek or narrow strait, when the bluff S.E. point of Pulo Cocob that forms the entrance of the strait is bearing N. by W. $\frac{1}{2}$ W. The coast betwixt Pulo Pisang and Pulo Cocob is lined by a shoal mud bank, with small gaps in it and projecting spits, which should not be approached under 12 fathoms; for it is generally steep to, from 11 or 12 fathoms. The Gunjavar shoaled suddenly from 14 to 5 fathoms on the edge of it, a little to the S.E. of Pulo Pisang; she had 3 fathoms in stays, and touched the ground, the outermost islet off Pisang bearing N.W. $\frac{1}{4}$ W., the innermost one N.N.W. $\frac{1}{4}$ W., distant 2 or 3 miles from Pulo Pisang.

To sail from Pulo Pisang towards Singapore Strait.

Do not bring the outer islet off Pulo Pisang to the westward of N.W., until 4 or 5 miles past Pisang, in standing towards the shore bank; the western part of Pisang may then be brought to bear occasionally N.W., in working towards Pulo Cocob, or the shore should not be approached nearer than 11 or 12 fathoms.

In the fair channel, between Pulo Pisang and Little Carimon, the depth is mostly from 16 to 18 fathoms, differing very little, until the water shoals on the edges of the banks that bound it on either side: when the North-Eastern Brother is on with the north end of Little Carimon, or nearly so, it is a good mark to tack from the south side of the channel, for the depths begin *then* to decrease quickly on the S.E. end of the Long Middle Bank, when under 13 fathoms. In working during the night, keep the lead briskly going, and do not borrow under 13 or 14 fathoms on either side; with a fair wind, keep in 17 to 19 fathoms about mid-channel.

Little Carimon and the Brothers.

LITTLE CARIMON, bearing from the highest part of Pulo Pisang S. 25° E., about 7 or $7\frac{1}{2}$ leagues, is a high bold island, about $2\frac{1}{2}$ miles in length N.W. and S.E., and one mile in breadth, rising to a peak in the centre, covered with trees; its north end is in lat. 1° $8\frac{1}{2}'$ N. The round islets, called the Brothers, lie to the N.W. of it; the two outermost, about 3 miles off, are near each other; the other, of similar appearance, lies within a mile of the Carimon, and is not so soon discerned as the two outer ones. About 2 miles to the southward of the Brothers there is a rock above water, not far off Great Carimon, and entirely out of the track of ships.

Great Carimon.

GREAT CARIMON, separated from the south-west side of Little Carimon by a narrow passage, has near its north end two high peaked hills; from the base of these, it consists of low level land, the whole extent of the island being 3 leagues in a S.S. Easterly direction towards the straits of Durian, and it nearly joins the northern extremity of Sabon Island. Near the west side of Great Carimon there are several low islands of various sizes, and its east side is fronted by a shoal mud bank; but the N.E. point has from 6 to 8 fathoms water very near it, about a mile from the islet that lies in the passage between it and the south end of Little Carimon: from the south end of the latter, a flat with $2\frac{1}{2}$ fathoms on it projects one mile off; the depths increasing to $3\frac{1}{2}$, 4, and 5 fathoms, at a greater distance from Little Carimon.

On the north and east sides, the Brothers and Little Carimon are bold to approach,

with soundings of 18 to 22 fathoms near them, and generally 17 or 18 fathoms in mid-channel betwixt Little Carimon and the S. E. point of Pulo Cocob, from which it bears S. by W., distant 8 or 9 miles: the depths are nearly the same from mid-channel, close to the edge of the bank that projects out from the Malay shore to the distance of $1\frac{1}{2}$ miles; and it stretches from Pulo Cocob entrance to the eastward around Tanjong Boulus.

TANJONG BOULUS, or BOORO, in lat. 1° 15′ N., about 4 miles S. Eastward from the south end of Pulo Cocob, and 3 leagues N. E. by N. from Little Carimon, is the southernmost extremity of the Malay Peninsula, and of the continent of Asia; it is a broad semicircular tongue of low land, having high trees on its western side; and low, bright green mangroves to the eastward. Inland about $6\frac{1}{2}$ leagues to the northward of Tanjong Boulus, there is an isolated mount, called Goonoong Poolai, or Pontiana; all the adjacent country is low. *Tanjong Boulus.*

The mud bank that extends from Pulo Cocob entrance, around Tanjong Boulus, is steep to, on the outer edge, and projects about $1\frac{1}{2}$ or 2 miles from the shore. The Milford grounded on it in 1786. H. M. S. Dedaigneuse, in company with the fleet from China, in January, 1805, steering W. by N., grounded upon it in the night: she had 8 feet water over the starboard bow, 5 fathoms under the stern, and the anchor laid out with two-thirds of a cable in an E. S. E. direction to heave the ship off by, was in 17 fathoms water. When aground, the N.W. end of Little Carimon bore S. 50° W., south end of it S. 33° W., North Brother W. 28° S., the S.W. end of Pulo Cocob N. 57° W., north side of it N. 48° W., the eastern rounding of Tanjong Boulus N. 58° E., its western rounding N. 46° W., the limit between the low green mangroves to the eastward and the high trees westward bearing North, off the nearest part of the shore about $1\frac{1}{4}$ miles. Abreast of Pulo Cocob opening, the mud bank projects a little farther from the shore; and 14 or 15 fathoms is near the verge of it in that part. *and the adjoining mud bank.*

From Tanjong Boulus, the coast takes a N. E. direction towards the Old Strait of Singapore, which is formed between the main and the west part of Singapore Island, having Pulo Marambon, called also Isle Cobra, in the entrance. This strait is from half a mile to $1\frac{1}{2}$ miles broad, with soundings of 5 or 6, to 9 or 10 fathoms, bounded on the south side by the large island Singapore, and on the north by the main land of Johore and the contiguous islands. Betwixt the east point of Singapore Island and Johore Hill, the eastern mouth of the Old Strait communicates with the large strait, now in general use; the former being more contracted, and having strong tides, is now seldom chosen by any ship.* *Old Strait of Singapore.*

FROM abreast Tanjong Boulus, at 3 or 4 miles' distance, the course is about E.S.E. to pass on the north side of Tree Island, and to round the Rabbit and Coney at the entrance of Singapore Strait; but this must depend on the direction of the wind and tide, the latter being very irregular hereabout, occasioned by the various islands and channels. The flood from the Bay of Bengal sets through the strait to the Carimons, and about Tree Island it meets the flood tide which comes from the China Sea by the Strait of Singapore, producing a division of tides at this place. About Tree Island, the *Course from Tanjong Boulus to pass Tree Island.* *Tides.*

* Captain Benners, in an American ship, went into the eastern entrance of the Old Strait, several years ago, and anchored at Johore in search of pepper. At leaving that place, he passed to the westward through the Old Strait, backed and filled with the tide most of the way, and had no less water than 5 fathoms, regular soundings.

tide sometimes sets fair through the channel, about W. N.W. and E. S. E., 5 or 6 hours each way; and at other times 6 hours in one direction, and 12 or 18 hours in the opposite direction. It sometimes sets about N.W. and S. E., frequently North and South, in a direct line across the channel, betwixt the Straits of Durian and the west entrance of the Old Strait of Singapore. After getting 8 or 9 miles to the eastward of Little Carimon, it is prudent in the night to anchor, for it would *then* be very dangerous to pass Tree Island, on account of the uncertainty of the tides, unless Barn Island be distinctly seen, and its bearing obtained correctly.

SINGAPORE STRAIT.

Singapore Strait.

SINGAPORE STRAIT, called Governor Strait, or New Strait, by the French and Portuguese, may be considered to commence at Tree Island, which is the first danger in the approach to it, and where the channel becomes narrow; from thence, it extends about 17 leagues to Pedro Branco, at its eastern entrance.

Tree Island:

TREE ISLAND or BANK,* in lat. 1° 7½′ N., bearing from the north end of Little Carimon East a little southerly, distant about 5 or 5¼ leagues, and from the Coney off the south end of Barn Island W. 9° S., distant 5 or 6 miles, is a bank of rocks and sand very little elevated above the sea at high water, having on it two small trees or bushes, separated from each other. From the West and N.W. part, a reef or spit projects one mile, on the extremity of which, the water shoals when passing near, and it ought not to be approached under 13 or 14 fathoms.

to pass it.

In clear weather during the day, the North Peak of Great Carimon on with the South Point of Little Carimon is a *fair mark* for passing Tree Island; but in dark weather, or in the night, Barn Island is the best guide.

The south end of Barn Island kept E. by S. is a mid-channel bearing, in passing Tree Island. With a working wind, do not near the shoal on the north side of the channel, more than to bring the south end of Barn Island E. S. E., nor approach Tree Island nearer than to have the same bearing E. 5° S. Abreast the N. E. point of Tree Island we had 13 and 14 fathoms, being near it, with the south end of Barn Island bearing E. 3° S.; but it should not be brought to the Eastward of E. 5° S. or E. 4° S., when abreast the N.W. end of Tree Island. It is high water off Tree Island at 1½ hours, when the tides are inclined to be regular, but they seldom are so.

Red Island, and the Brothers.

RED ISLAND, distant 2¾ miles, nearly E. S. E. from Tree Island, and S. 46° W. 3¼ miles from the Coney, is small, with a beach of red sand, and covered with green trees. The Brothers, about three-quarters and 1½ miles S. E. by S. from Red Island, are two islands covered with trees; the northern one, called Long Island, is low, lying about half-way between Red Island and the other, called Round Island, which is small, and considerably elevated.

* See a former section, " Directions for Sailing through the Straits of Durian and Phillips Channel," for a further description of this, and other dangers. It is proposed to erect a lighthouse, or beacon with a light, upon Tree Island, to guide ships in passing it in the night.

There is a passage to the southward of Tree Island, and betwixt it and Red Island, through which the ship La Paix, Captain Wright, sailed on her voyage from Bengal to China, in July, 1805. They carried soundings of 15 and 20 fathoms to the southward of Tree Island, and shoaled to 8 fathoms soft bottom when abreast Red Island, about half a mile distant. Passage betwixt Tree and Red Islands.

In December, 1811, the Charlotte, with several other ships under convoy of H. M. S. Clorinda, from China, rounded the Coney in the night, and the wind being scant from the northward, in hauling up for the Carimon, they fell to leeward of Tree Island,* seen on the weather bow, a dangerous situation. At this time most of the ships tacked, but the Charlotte grounded on the KENT ROCK,† which is about 20 feet square, having on it $1\frac{1}{2}$ fathoms at low water, with $5\frac{1}{2}$ and 6 fathoms all round, deepening to 8, 10, 15, 17, and 35 fathoms at a small distance to the N. Eastward of it. When upon the rock, Tree Island bore from N. 63° W. to N. 85° W., Red Island S. 57° E., just touching the east end of Long Island, Round Island S. 51° E., the Rabbit a sail's breadth open with St. John's N. 67° E., Coney N. 72° E., Barn Island N. 54° E. to N. 65° E. She lay on the rock till high water, then floated off, and when aground on it, the tide ran past her about 4 knots to the southward; whilst the other ships and the frigate, at anchor within 2 cables' lengths of the rock, experienced a tide only of one knot per hour. Kent Rock.

This appears to be the same rock on which the ship Mandarin was lost the year preceding, and it seems to have been known to English navigators at an early period. In the Kent's journal, February, 1708, is the following remark: "After rounding the Rabbit and Coney close, came no nearer Tree Island (probably Red Island) than 30 fathoms, being the lee side, and an *ugly rock* in the channel, which I have struck upon formerly, is unknown to most persons who come this way: it is about 3 miles East from the easternmost single tree on the Sandy Island," (Tree Island).

THE SULTAN SHOAL, on which the ship of this name grounded in 1789, is about two-thirds of a cable's length in diameter, of circular form, and the rocks on the shoalest part are about 2 feet above the sea at low water spring tides. It is about 6 miles from Barn Island and 5 miles from Tree Island, and was examined by Captain Ross, the Company's Marine Surveyor, in 1829; he found it steep to, 7 fathoms water close to its verge, within a boat's length of the rocks, and from its centre the following magnetic bearings were taken. South high peak on Great Carimon S. 62° 11′ W.; Tanjong Boulus extreme N. 81° 27′ W.; Snake Island summit N. 28° 40′ W.; North Tree on Tree Island S. 6° 53′ E.; Coney S. 51° 35′ E., just open clear of the south extreme of Alligator Island; Pulo Salook S. 70° 54′ E.; this is a small isle about 2 miles to the N.W. of Alligator Island. Do not shut in the Rabbit behind Alligator Island, and you will pass to the southward of the shoal. Sultan Shoal.

The soundings in the fair channel between Tree Island and Sultan Shoal are irregular, from 15 to 25 fathoms; generally 14 to 16 fathoms near Tree Island, deepening to 22 and 24 fathoms in the north side of the channel, until the decrease is sudden to Soundings in the channel, and near the shoals.

* After rounding the Coney in the Gunjavar, in 1789, and hauling up W. N.W. with the wind at North, the night became very dark, lost sight of Barn Island: we thought the tide was setting fair through the channel to the W. N.W., but having lost the lead, the first cast after preparing another was 5 fathoms; the helm was instantly put down, and the anchor let go when the ship came head to the wind, and found the tide setting South. At day-light, we had not room to cast, until the wind shifted, being within a cable's length of the rocks projecting from the S. E. end of Tree Island.

† See this, and another rock, described, in the section, "Directions for Sailing through the Straits of Durian and Phillips Channel."

12 and 8 fathoms on the edge of Sultan Shoal. In that part of the channel comprised betwixt Tree Island and Barn Island, the depths are mostly from 20 to 9 fathoms; but there are some banks of 6½, 7, 8, and 9 fathoms in the fair channel, proper for anchorage; and on the west side of Barn Island, at three-quarters to 1½ miles off it, there is good anchorage in 8 to 11 fathoms out of the stream, where ships may stop tide, or anchor during the night.

Anchorage.

Alligator Island;

ALLIGATOR ISLAND nearly joins to the N.W. end of Barn Island, the space between them affording no passage for ships; it is about the same size and height as Barn Island, of a sloping form, one end lower than the other: this island may be approached on the S.W. side occasionally to 10 or 11 fathoms, about three-quarters of a mile, or 1 mile off. To the northward of it lies Pulo Bookura, eastward of Sultan Shoal: and all these islands extending from Barn Island to the entrance of the Old Strait and to St. John Island are united by reefs and dangers, mostly covered at high water.

adjacent islands and reefs.

Barn Island.

BARN ISLAND,* bearing E. ¼ N. 7 or 7¼ leagues from the north end of Little Carimon, and E. by N. ½ N. 5 miles from Tree Island, is moderately elevated, of a square level aspect, covered with trees, and discernible at 5 leagues' distance; it is bold to approach on the west side to 9, 10, or 11 fathoms, about half or three-quarters of a mile off, but the shore is rocky at low water, in landing with a boat.

Rabbit and Coney.

THE RABBIT and CONEY are two small round islets, connected with the S.E. end of Barn Island by a reef of rocks partly dry at low water; the Coney, or outermost, is the smallest, distant from the point of Barn Island rather less than half a mile. The Rabbit is on with the centre of Barn Island bearing N. 53° W., the Coney is on with it N. 35° W., and these islets are on with each other bearing N. 17° E.

From the top of the Coney, Captain Ross observed by theodolite the highest peak of Great Carimon to bear S. 78° 25′ W., Middle Peak of ditto S. 86° 5′ W., Tree on Tree Island S. 81° 9′ W., being nearly under the Middle Peak of Great Carimon, Large Tree on Red Island S. 44° 37′ W., Buffalo Rock N. 89° 45′ E., South point of St. John Island N. 61° 43′ E.

Directions.

Ships keep near the Coney in passing; but as a rocky spit, covered at high tide, projects from it to the southward nearly a cable's length, this should be avoided by keeping about two cables' lengths from the islet, in 20 to 25 fathoms, but the soundings are not very regular. In working here, do not stand far over towards the south shore, in case of falling calm; for the water is deep on that side, with a rocky bottom unfavourable for anchorage, and some rocks, not visible at high water, lie about a mile off the projecting part of that shore.

To sail from Little Carimon to the Coney.

When in mid-channel between Tanjong Boulus and Little Carimon, in 17 to 20 fathoms water, steer E. S. E. or S. E. as the prevailing wind and tide require, observing to bring the north point of Little Carimon W. ½ S., or draw gradually the North Peak of Great Carimon in one with the south point of Little Carimon, bearing about W. by S. ½ S., which will carry you about 2 miles to the North of Tree Island. If the wind is southerly, borrow towards it to 14 fathoms, about a mile distant, but no nearer, which will favour you in rounding the Rabbit and Coney. The south end of Barn Island kept E. ½ S. is the best guide in passing Tree Island with a southerly wind; E. by S. is the mid-channel bearing; and in working, you may traverse with it

* Called Square Island, or Passage Island, by the French.

bearing from E. $\frac{1}{2}$ S. to E. S. E., in passing between Tree Island and Sultan Shoal. Having passed Tree Island, a S. Easterly course should be steered, to round the Coney at from 2 cables' lengths to 1 or $1\frac{1}{2}$ miles distant; or if the wind and tides are adverse, or a dark night be coming on, anchor to the westward of Barn Island, out of the strength of the tides.

MIDDLE ISLAND, lying on the north side the channel, rather nearer to St. John than to the Coney, is a low green island, with others extending from it to the N. Westward. A spit or prong projects a quarter of a mile from the S. E. end of Middle Island; and S. E. by E. from it three-quarters of a mile there is a *reef of rocks*, always covered, except at very low tides, some points of the rocks being then just discernible, even with the surface of the water: St. John south point bears from it N. 67° 40′ E., the Coney S. 58° 30′ W., and the Buffalo S. 13° 20′ E., by compass. There is deep water inside this reef from 14 to 7 fathoms, as found by Captain Ross; and the Carron and other ships, returning from China in 1804, after passing from St. John towards the Coney in the night, got on the north side of it, having hauled over too much in the north side of the channel. The reef being a steep coral wall on that side, the Carron in rubbing against it received no damage. Some of the European fleet from China, in 1809, also got within this reef during the night, and the ship Dart struck on it, by standing too far over to the northward in working. The south point of St. John kept E. N. E. $\frac{1}{2}$ N., carries a ship clear of it to the southward. The north side of the channel, between Barn Island and Middle Island, is bounded mostly by shoals and coral reefs, partly dry at low water.

Middle Island. Reef near it. Other reefs on the north side of the channel.

ST. JOHN (the south point, or the small islets close to, and appearing as part of that island) bears from the Coney E. 27° N., distant about 3 leagues. A direct line, or straight course between them, is the fair track along the north side of the channel, in irregular soundings mostly from 18 to 30 fathoms, sand and gravel, or rotten rock, where you may anchor occasionally; but the south side of the strait must be avoided, the depths there being great, and the bottom rocky and dangerous. St. John is composed of two moderately elevated sloping islands, extending North and South, separated by a cove or narrow gut, with from 10 to 5 fathoms water in it, quite through; they appear as one island, with a regular convex outline, until close to their southern extreme, when the gap between them is perceived. Close to the south point of the western island there is a small islet, which is steep to, having 18 to 25 fathoms within a cable's length of it: and nearly close to the east side of the eastern island there is also a round islet, having 18 and 20 fathoms water near it on the east side. This is called Signal Island, as a signal post has been fixed here, since Singapore became a British settlement. About a mile to the westward of the south point of St. John there are two small round islands, called the Sisters, with 20 or 25 fathoms water near them on the S. E. side, but rocks join them to the northward.

The channel from the Coney to St. John.

THE DANGERS on the south side of the channel are, 1st, a reef of rocks about $3\frac{3}{4}$ or 4 miles to the S. Eastward of the Coney, always covered, except at low water it is partly visible. The Snow Forth anchored in 40 fathoms about half a mile from this reef, and was obliged to cut from her anchor, it having hooked a rock.

Dangers on the south side of the channel.

BUFFALO ROCK, about 3 miles N. Eastward from the former, bears East or E. 1° N. Buffalo Rock.

from the Coney $4\frac{1}{4}$ or 5 miles,* from the south point of St. John S. 34° W. about the same distance, and from the centre of Middle Island S. 23° E., distant $3\frac{1}{2}$ or 3 miles, being nearly in mid-strait between that island and the southern shore, but nearer the latter. It is a black rock, about the size of a long-boat, always seen above water, with soundings of 30 and 40 fathoms near it to the southward, and close to it on the N.W. side 13, 18, and 25 fathoms irregular. The ship Soliman Shah, having got over on the south side of the strait during light winds, was drifted by the tide close to the Buffalo Rock, and let go her anchor in 60 fathoms, from which she cut when a breeze sprung up, to keep clear of the danger. Betwixt the Buffalo Rock and the reef off the S. E. end of Middle Island is the narrowest part of the strait; it is prudent, in working here, to keep nearest the north side of the channel, making short tacks, and not to deepen above 30 or 34 fathoms towards the Buffalo Rock, and the south side of the strait.

Two Rocky Ledges.

TWO LEDGES OF ROCKS, bearing S. 42° E. and S. 45° E. from the gap, or south point of St. John, distant 3 or $3\frac{1}{2}$ miles, and about 2 leagues eastward from the Buffalo Rock, lie near each other, and part of them is always visible above water. There are overfalls, and shoal water near them to the N. E. and Eastward, which, with the dangers before mentioned, make it prudent to avoid the south side of the strait, until several miles to the eastward of St. John.†

Tides.

THE TIDES set fair through the channel about E. N. E. and W. S. W. between the Coney and St. John, frequently very rapid, with eddies on the springs. Their velocity, when strongest, is from 4 to $4\frac{1}{2}$ miles per hour, making it unpleasant to anchor here in large ships when the weather is unsettled in the night, particularly if unacquainted. When the weather is favourable, and the tides moderate, you may conveniently anchor in any part of the north side the channel, betwixt the Coney and St. John, should calms or other circumstances render it necessary to stop tide; but the best anchorage is fronting Middle Island, upon a bank of rotten rock and coarse sand, having soundings on it from 15 to 18 fathoms.

Directions on parting a cable in the night.

If when at anchor during the night, the weather becomes squally, making a ship sheer about with a strong tide, and part her cable, do not let go another anchor, except it be dark; but run as the wind permits, either round the Coney, and anchor to the westward of Barn Island, out of the tide, or round the south point of St. John, and anchor to the N. East of it, in 10 to 16 fathoms in Singapore Outer Road. With the body of St. John bearing from W. S. W. to S.W. by W., about $1\frac{1}{2}$ or 2 miles off the beach, the anchorage is good upon the mud bank, and here the tide is very weak.

Anchorage.

In approaching this anchorage from the eastward, reduce sail in time, as the depths decrease quickly from 30 and 26 to 16 fathoms on the bank, and in a dark night it would be imprudent to anchor under 12 or 14 fathoms, for Rocky Flats stretch out from the islands that lie between St. John and Singapore, with very irregular sound-

* These distances between the Coney and St. John, and contiguous dangers, are given from the cursory survey of Captain Ross in 1827; but the relative distances were formerly thought somewhat greater than marked on the chart of his survey.

† It has been said, than an American ship passed along the south side of the strait, betwixt it and the Buffalo Rock, and inside these ledges to the S. E. of St. John, without discovering any other dangers; but there is reason to think, that the bottom is generally rocky on that side, and the tides very irregular, occasioned by the various inlets among the islands which form it; the passage along it ought not to be attempted. Even were it surveyed, the northern channel, being wider, would still be found preferable.

ings near their edges of 19 to 6 or 4 fathoms. On Barn Island, firewood may be procured, and at a little distance from the shore of the gap that separates the two islands of St. John there *is said* to be a pond of good water on the easternmost island, overshaded by the trees. Wood and water.

Abreast of the south end of St. John, a ship ought not to anchor if it can be avoided, for the water is deep, and the tides run in eddies with greater rapidity than in any other part of the strait. The flood has been observed in both monsoons to run to the westward 10 or 12 hours at a time, or even 18 hours, strong and weak, alternately; at other times, the flood sets only 6 hours to the westward, and the ebb the same length of time to the eastward; but the tides throughout Singapore Strait are seldom very regular. The perpendicular rise and fall is about 12 to 14 feet on the springs. Tides.

THE CHANNEL betwixt the Coney and St. John should not be attempted in the night, if unacquainted, or the weather be not clear; but in settled weather there is little danger to be apprehended in passing through the channel with the tide, in a handy middle-sized ship, even with a contrary wind, if a little acquainted, by attending to the following instructions. To sail through the channel from the Coney to St. John.

If the night is not very dark, either Barn Island or St. John will be visible, and when mid-way between them, both at the same time. As a guide, use the south end of either of these islands, whichever is most conspicuous. The south end of Barn Island W. $\frac{3}{4}$ S. to W. by S. $\frac{1}{2}$ S. are good bearings; or the south end of St. John from N. E. by E. to E. N. E. $\frac{1}{2}$ N.; but when near it, the south end of this island may be brought from E. N. E. $\frac{1}{2}$ N. to N.E. in working. The narrowest part of the channel is when the Buffalo Rock bears S. by E. to South, betwixt it and the reef projecting to the eastward of Middle Island; and to know in the night when you are in this part of the channel, Middle Island will in general be perceived nearer, and more distinctly than the other islands on the north side the channel. When approaching the meridian of the Buffalo Rock, observe, that it bears S. 23° E. from the centre of Middle Island; when, therefore, this island is bearing about N. N.W., keep the south end of St. John E. N. E. $\frac{1}{2}$ N. to E. N. E. $\frac{3}{4}$ N., or the south end of Barn Island W. by S. $\frac{1}{2}$ S., which is a good bearing until about 2 miles to the eastward of Middle Island; being then past the reef on the north side the channel, and well to the eastward of the Buffalo Rock, steer direct for the south point of St. John, or make short tacks if the wind is contrary, to pass it at a small distance.

SINGAPORE TOWN (the Flagstaff*), in lat. 1° 17′ 22″ N., lon. 103° 51′ E., is situated 4 miles directly North from the centre of St. John, or North a little westerly from Signal Island, and it is rapidly advancing in population and commercial prosperity. This place is of great importance, both as a central depôt for trade, and a naval station for the protection of commerce in the event of a war, the harbour being secure for numerous ships of any size, and its proximity to the China and Java Seas enhances its value. Pulo Panjang, called also Blaken-matte, or Long Island, has a hill on it, and is separated from the south point of Singapore by a narrow passage leading into the *Little Strait* of Singapore now called New Harbour, which is fronted by Pulo Branni, a small round island; and on the north side this island, between it and Singapore Point, is the passage, having soundings from 9 to 5 fathoms. Here ships might be easily protected by batteries erected on the contiguous hills or Singapore.

* Captain Ross places it in lat. 1° 16′ 15″ N., lon. 103° 53′ 15″ E., or 33′ 36″ West from Pedro Branco.

shores, which form this secure harbour, and docks may probably hereafter be constructed at this place, for affording repairs to shipping.

There is a cove to the N. Eastward of the town, about three-quarters of a mile in length, and one quarter of a mile wide, with depths of 9 to 6 feet water, convenient for proas or small vessels, the entrance of which is formed on the eastern side by Sandy Point. Deep Water Point, distant about $1\frac{1}{2}$ miles East from the point last mentioned, has 5 and 6 fathoms water near it, inside a narrow spit of $2\frac{1}{2}$ fathoms, which fronts it at the distance of rather more than half a mile.

The south coast of Singapore Island is level and woody, with two Red Cliffs, rather obscure, one of which, being to the northward of the east point, is not visible unless the entrance of the strait is well open: the opposite side of the strait is also woody, but not so level as the former.

In the Outer Road of Singapore there is a narrow mud bank, extending about 2 miles, nearly N. E. by E. and S.W. by W., which might be alarming to strangers, although the least water on it is $4\frac{3}{4}$ fathoms near its western extremity, with Signal Island bearing S. by W. to S. S.W. about $1\frac{1}{2}$ to 2 miles; the east end of this mud, bank bears South from Deep Water Point $1\frac{3}{4}$ miles, and has soundings near it all round, from 7 or 8 to 9, 10, and 11 fathoms. About a quarter of a mile inside the mud bank, the depths are 11 and 12 fathoms; and a quarter of a mile farther in, 9 or 10 fathoms, about $1\frac{1}{4}$ miles' distance from Singapore Town, and the same from Sandy Point, which is the proper anchorage in the road or harbour.. Under 8 or 7 fathoms, the water shoals suddenly to $3\frac{1}{2}$ fathoms, about a mile off Sandy Point, bearing about North, and Singapore Town W. by N. $\frac{1}{2}$ N., which is a convenient anchorage for small vessels. But large ships must be careful not to run too far in, for several have grounded where the bank is steep, on the western side of the harbour. The Bridgewater, July 29th, 1827, anchored in 9 fathoms, and with 50 fathoms of cable veered out, had only $4\frac{1}{2}$ fathoms at low water; she hove in cable to 38 fathoms, had then $5\frac{1}{2}$ fathoms at low water, and 8 fathoms at high water; making the perpendicular rise and fall of tide 15 feet on the springs, and it may be sometimes more. The bearings from her anchorage were, Flagstaff on the hill W. N.W., Johore Hill E. N. E., Signal Island, the small island off St. John, S. $\frac{1}{2}$ W. In August, 1833, H.M.S. Curacoa found 13 feet to be the greatest rise and fall during spring tides.

Sailing Directions.

To sail into Singapore Road, in coming from the westward, after having passed near to St. John and Signal Island, steer N. by E. or North, as the wind or tide may require, and you will shoal to 5, or probably $4\frac{1}{2}$ fathoms on the mud bank, and afterwards deepen to 11 or 12 fathoms; continue the same course till in 10 or 9 fathoms, and anchor in these depths in a large ship, as the bank is steep; but a small ship may conveniently anchor in 7 or 6 fathoms, with the Flagstaff on the hill at the back of the town about W. N.W., Signal Island about S. by W., and Deep Water Point N. E., off shore about $1\frac{1}{2}$ miles. If working into the road, do not borrow towards the islands between St. John and Singapore, nearer than to bring Signal Island to bear South, or S. $\frac{1}{2}$ E. at farthest. It is proposed to erect a lighthouse at Singapore, as a guide for ships in the night when entering the road, as they are liable to mistake the various lights of the town.

On the west side the anchorage of Singapore Road, the *narrow* passage leading into Little Strait, or New Harbour, is used by the trading proas; Captain Robert Scott, who passed through it in a Buggess proa, in 1797, gives the following directions for it; it is, however, too narrow for large ships.

If you intend to proceed through the Little Strait within St. John, steer into the bight

towards Singapore, till you open the mouth of the strait, which is very narrow, but deep; having entered it, keep in mid-channel till through, then steer for a small sandy island with a tree on it, which leave on your left hand about half a mile; afterwards keep near the starboard shore till you open the mouth of the narrow strait leading into the Old Strait of Singapore, and keep nearly in mid-channel, as both sides are fronted by some sunken rocks. After getting in, there are 5 and 6 fathoms all through the strait; and when clear out, you will see the north part of Little Carimon bearing W. by S.; steer then about W.S.W. ½ S., till past Tanjong Boulus, and afterwards steer for Pulo Pisang.

NEW HARBOUR was surveyed by Captain Ross in 1827, with the proximate channels, and the following description is given along with the chart of his survey.* Between the south point of Singapore Island and the two contiguous islands there is a passage or Little Strait, called by the Malays, Salat Battoo Baloo, also Selat Sinki, from a rock on the north side of its western entrance, resembling a vessel under sail. This strait extends 2 miles nearly East and West, and is from 350 to 450 yards in breadth, with depths from 5 to 7 fathoms, and is free from danger, excepting a small reef that projects off the west end of the easternmost island. It will be found a secure anchorage for many ships of large size, distant only 1¾ miles from the town of Singapore. The western entrance, although only 300 yards across from point to point, is safe, having 5 or 6 fathoms close to either point, and 11 or 12 fathoms in mid-channel. The eastern entrance is rendered intricate by a rock in mid-channel, visible at low spring tides, and on either side of it there is a narrow passage; in the northern one the depths are 9 and 10 fathoms; and in the southern one 4½ to 5 fathoms. The rock might be distinctly marked by fishing stakes placed around; and two or three warping buoys laid down would facilitate the passage of ships through this narrow strait; but those of large size would probably have to enter by the western channel. New Harbour.

Coming from the westward, there are two passages leading to the new harbour, one to the southward of the Sultan Shoal, and to the north of Pulo Salook; the other to the southward of the Rabbit and Coney, or, if coming from the eastward, to the southward of St. John Island; then between Middle Island and the two small islands that lie to the westward of St. John. If the western passage be adopted, give Sultan Shoal a proper berth, by steering for Pulo Salook bearing about East, till past the shoal, and when that island bears a little to the westward of South, haul to the northward until 1½ miles from it, before you steer to the eastward, to avoid a reef dry at three-quarters ebb, the north point of which bears about N. E. by N. 1½ miles from Pulo Salook, and the N.W. tree on Tree Island just touching the west point of Salook leads clear of, but near to the western part of the reef. Having passed the north point of this reef, steer about East towards the group of islands on the south side the passage, the first of which islands, being 2¾ miles E. N. Eastward from Pulo Salook, has a reef projecting a quarter of a mile from it; but this island must nevertheless be passed within half or three-quarters of a mile distance at farthest; for one mile North of it lies the south extreme of a reef, and another reef and sand lies three-quarters of a mile to the East and N. E. of the last-mentioned reef, which sand dries at three-quarters ebb. The channel between these reefs on the north side, and the islands on the opposite side, is about three-quarters of a mile wide, with 13 and 14 fathoms water in mid-channel, and 10 or 9 fathoms close to the edges of the reefs on either side. When the N.W. end of the large island, which is the northernmost of the group, and has been named Freshwater Island, bears Directions.

* Sold by Messrs. Allen and Co., 7, Leadenhall Street.

South, you are clear to the eastward of the reefs on the north side the passage; and here the channel becomes wide, and a ship may work nearly from side to side, to the western entrance of New Harbour.

If the Southern Passage between Middle Island and the Sisters (two small islands to the west of St. John) be adopted in proceeding towards New Harbour, give a proper berth to the detached reef that lies off the S. E. end of Middle Island, by opening well out from its eastern end the small islet that lies half a mile N.W. ¼ N. from its northern extremity; or by keeping open from the eastern side of Middle Island the western extreme of Freshwater Island bearing about W. N.W. ½ N., until to the northward of the detached reef; then steer about N. by W. for the western entrance of New Harbour, which bears N. by E. from Middle Island 3¼ miles, observing to guard against a reef that bears N. N.W. from the Sisters three-quarters of a mile, which is the only known danger on the eastern side of this passage; the islands bounding its western side may be approached within half a mile, or rather less, if necessary. The soundings close to the coral reefs that line the east side of Middle Island, the islet to the N.W. of it, and the N. Eastern side of Freshwater Island, are from 6 to 9 or 10 fathoms, and the same close to the reef N. N.W. of the Sisters; but in the fair channel they are usually irregular from 11 to 17, and in some places there are 7 or 8 fathoms, in other parts 19 or 20 fathoms, generally hard bottom. Tides. The tides are irregular in the above described passage among the islands, running about 2 miles per hour during the springs, the rise then about 9 or 10 feet. In Singapore Road it is high water at 9 hours on full and change of moon.

Directions for sailing eastward.

FROM THE SOUTH END of St. John Island, Pedra Branca bears E. by N. ½ N., distant 11 or 12 leagues, and until several miles past St. John, the south side of the strait must be avoided, on account of the ledges of rocks and overfalls already mentioned; but the north side is safe to approach to 12 or 10 fathoms, betwixt St. John and the Red Cliffs near the east end of Singapore Island, for the depths along the south side this island decrease pretty regularly from 36 or 40 fathoms in mid-strait, to 12 or 10 fathoms within a mile of the shore, all good anchoring ground. The depths in mid-strait are generally between 32 and 40 fathoms from St. John, until nearly abreast the Red Cliffs, and then decrease to 20 or 18 fathoms: they are irregular from 12 or 16 to 30 fathoms near Battam N. E. point,* which is the western entrance point of Rhio Strait, and bears E. ¼ S.† from the south end of St. John, distant about 4 leagues.

Boolang Bay.

BOOLANG BAY, in Battam Island, or Pulo Battaur, situated about 13 or 14 miles E. S. E. from Singapore, affords safe anchorage, and has lately been frequented by American ships; here they receive cargoes, and trade with Singapore, in order to evade the expenses that would be incurred by going direct to the latter port, as the former place is out of the limit of the British possessions.

The southern shore, adjacent to Battam N. E. point, is safe to approach within 2 or 3 miles, but in mid-strait is the best track with a fair wind, or even in working, to benefit by the strength of the tide, when it is favourable. If in deep water, and losing

* H. M. S. Curacoa, June 9th, 1833, anchored in 37 fathoms hard bottom at midnight, about 2 miles from the Battam shore, not expecting to find such deep water. At day-light, the apparent N. E. point of Battam bore S. 60° W., a small isle near it S. 71° W., Barbucit Hill N. 25½° E., Johore Hill N. 10° W., Bintang Hill summit S. 62° E., and the Strait of Rhio well open.

† E. ½ N. by the Admiralty Chart.

ground, haul in towards the Singapore side, and anchor in 15 to 18 or 20 fathoms. When the east part of the Red Cliffs, or the east end of Singapore Island, is brought to bear about N. by W., the north side of the strait ought not to be approached nearer than 2 leagues, but the mid-channel track ought to be preserved in passing Johore Shoal, off the entrance of the Old Strait of Singapore.

In entering the OLD STRAIT OF SINGAPORE from the eastward, observe that the passage lies between the east point of Singapore, called Point Francklin, and Pulo Ubin; care must be taken to avoid the reefs that project nearly a mile off the east end of the latter in a S. E. direction, rendering the passage narrow and intricate; the soundings are irregular, with a sudden decrease of depth in the entrance from 9 or 8 to 5 and 4 fathoms, and close to the shoal not more than 3 fathoms. Point Francklin is low, with a white sandy beach, and there is said to be a dangerous shoal betwixt it and the large Red Cliffs. The Old Strait is from 2 to $1\frac{1}{4}$ miles wide, and in entering, a mid-channel track is the best, with proper attention to the lead: within Point Francklin there are three rocks, and a small village, and the north side of Pulo Ubin is lined by mud and sand-banks. Several small rivers empty themselves into the Old Strait, and in sailing through, the small islands contiguous to Singapore should not be approached too closely. The soundings are irregular in passing Maljho River, and about mid-channel lies a reef of rocks; here the strait becomes much contracted, and abreast of Pulo Borroa, where the reef is situated, it is steep to, from 10 fathoms, with deep water in the channel, and the bottom is red clay; this is the narrowest part of the strait. The soundings again become regular, and the channel takes a S. S. W. direction to the entrance of the strait, which is the channel formed between Singapore and Snake Island, being not more than half a mile wide, on account of the reef which fronts the Singapore shore. The soundings decrease to $3\frac{1}{2}$ fathoms, deepening again to 5, 6, and 7 fathoms in passing Snake Island, and to 12 and 16 fathoms, mud, farther out. The tides are strong in the Old Strait, and rise about 13 feet: fresh water may be got in several of the rivers. *Singapore Old Strait.*

JOHORE RIVER, the entrance of which is formed between Point Francklin and the small island, lying a mile N.W. from Pulo Tokum, is more than half a mile wide, with 12 to $8\frac{1}{2}$ fathoms water; a shoal of sand extends off the west end of Pulo Tokum, and appears to join the small island that forms the entrance of the river. Pulo Ubin lies in the entrance of the Old Strait of Singapore, and to the west of Pulo Tokum, distant about $1\frac{1}{2}$ miles. In entering Johore River, care is required to avoid an extensive sand-bank on the larboard side of the river, as the water shoals very suddenly to $2\frac{3}{4}$ fathoms on its outer edge: an E. N. E. course will carry a ship in mid-channel, in soundings of 10 to $5\frac{1}{2}$ fathoms, which should be carefully attended to, the lead being the only guide in approaching the village on the eastern bank of the river. Steer for the village, until the whole of the river is open, preserving a mid-channel track, where the soundings are regular over a mud bottom, from 7 to 5 and 4 fathoms. About 2 miles above the first point, Batto Balloo, there is a small village, and 6 miles farther, Johore Town, built with bamboo and mud, where good water may be procured, but no other article. The river is from 2 to $1\frac{1}{4}$ miles wide; rise of tide from 8 to 10 feet. In sailing up to the town, the soundings were generally from 6 to 8 fathoms; and from $5\frac{1}{2}$ to $4\frac{1}{2}$ fathoms above the town. *Johore River.*

JOHORE SHOAL is composed of hard sand, having $2\frac{1}{2}$ fathoms on its shoalest *Johore Shoal.*

part at low water, 3 and $3\frac{1}{2}$ fathoms on its southern extremity, and from 12 to 14 or 15 fathoms very near to it, on the south, east, and west sides. The south end of St. John bears from its eastern extremity S. W. by W. $\frac{1}{2}$ W., Johore Hill N. N. E., South Cape of Johore E. by N. $\frac{1}{2}$ N., and it is 3 or 4 miles distant from Johore Point, and 4 or $4\frac{1}{4}$ miles distant from the east point of Singapore Island, directly fronting the entrance of the Old Strait of Singapore. A small hill on the east side of this strait, to the northward of Johore Hill, called False Johore Hill, bears North from the east end of the shoal, and this small hill is in one with the east point of Singapore Island bearing N. 38° E. As the water shoals quickly from 17 or 18 to 15, 12, then 4 fathoms on its eastern extreme, do not borrow under 16 or 17 fathoms towards it, but keep about mid-strait in the night, attending to the lead if your distance from either shore is not distinctly perceived. In day-light, the Island St. John kept W. by S. is a fair bearing in passing the shoal, and also in passing through the strait to the eastward: but if the south end of St. John is kept to the westward of S. 65° W., you will pass clear of the shoal. Captain W. Owen examined this shoal in H. M. brig Seaflower, in April and September, 1807, and found it to extend from the easternmost Red Cliffs of Singapore Island in a long flat spit to the eastward, with $2\frac{1}{2}$ fathoms on it at low water, and no *apparent* passage between it and that island, except for small vessels, but the water shoals gradually towards its western part. Between the east end of the shoal and Johore bluff point there is a safe channel, 2 or $2\frac{1}{2}$ miles wide, leading into the Old Strait of Singapore and Johore River, with depths of 8 to 12 fathoms, decreasing to 5 and $4\frac{1}{2}$ fathoms near the shore, and to 6 fathoms near the north side of the shoal. To avoid Johore Shoal in coming from the eastward, come no nearer to the north shore than 17 fathoms after Johore Hill bears North, or Barbucit Hill N. E. $\frac{3}{4}$ E.* The breadth of the channel from Johore Shoal to Battam N. E. point, nearly opposite to it, on the south shore, is about 6 miles, and the soundings between them are mostly from 20 to 24 fathoms in the fair track, decreasing towards the edge of the shoal, and also near the south shore to the westward of the point; but to the N. Eastward of this point, off the entrance of Rhio Strait, there are 30 and 34 fathoms in some places. Close to Battam N. E. point there is a small island, with rocks contiguous to it.

Directions.

Johore Hill, and adjacent coast.

JOHORE HILL is of a regular oblong sloping form, covered with trees, situated a little inland from the bluff, called Johore Point, which forms the east side the entrance of the Old Strait of Singapore; a little inside of which, the river and town of Johore is situated, formerly a place of considerable trade, but now unfrequented. Betwixt the east point of Singapore Island and Johore Shoal the passage is not safe for ships of large size, as the shoal is thought to be joined to the point by a spit of 2 and $2\frac{1}{2}$ fathoms, which Captain Court passed over in a small vessel.

Barbucit Hill and coast.

BARBUCIT HILL, in lat. 1° $24\frac{1}{2}'$ N., bearing from Pedra Branca W. by N. $\frac{1}{2}$ N., distant $14\frac{1}{2}$ miles, is a regular pyramid rising from the low land, about $2\frac{1}{2}$ leagues E. N. Eastward from Johore Hill; and being only about 5 miles inland from Romania

* The Kent, in February, 1708, from Point Romania, kept in 10, 12, and 13 fathoms to Johore Point, and in steering out to the southward got 4 fathoms on Johore Shoal, and the boat near the ship had 3 and $2\frac{1}{2}$ fathoms, coral rocks. Her journal has the following remark: "To avoid this dangerous shoal, let no one come nearer the Bluff White Sandy Point (Red Cliffs) that forms the west side of the entrance into Johore than 12 fathoms, which is about 5 miles off shore." In the London's journal, June 26th, 1700, it is stated, that Johore Shoal projects three-fourths of the strait's breadth from the western shore. This ship lay about a month at Johore, taking in pepper.

Point, it is used as a mark in entering the strait. About mid-way between Johore Point and Barbucit Hill, the land of Johore projects farthest to the southward, and is called the South Cape; it bears nearly E. by S. from Johore Point, and West from Pedra Branca; the land between it and Johore Point forms a bay, with shoal water in it, but the depths decrease gradually. There is an indifferent watering place in this bay, near the second point to the westward of the South Cape, inside a low black rock, lying near the shore.

POINT ROMANIA, in lat. 1° $22\frac{1}{2}'$ N., distant about 5 miles to the E. N. E. of the South Cape, forms the S. E. extreme of the Malay Peninsula, and, with the circumjacent coast, is level land, covered with trees. Close to Point Romania on the west side, lies Romania River, having 2 or 3 feet water at its narrow entrance, at low tide; it is navigable by boats 2 or 3 miles inland. Although nothing is found here but timber, fish, and reptiles, water may be procured with ease in this river, during the N. E. monsoon; but there are several better and more convenient watering places, in the sandy bays betwixt Point Romania and a small round island called Watering Island, about 3 miles to the westward, directly under Barbucit Hill. Inside this island there is an excellent stream upon the main, where fresh water may be got with facility in either monsoon; but, in the N. E. monsoon, the streams betwixt it and Point Romania are more convenient. In the eastern extremity of the long sandy bay, which contains Watering Island at its western part, there is a large rivulet, having shoal water projecting a considerable way out from the entrance, with rocks containing beds of excellent oysters.

Point Romania.

Watering places.

The whole of the coast of Johore, from Johore Point to Point Romania, may be approached by the lead; the water shoals quickly from 25 to 15, 11, and 10 fathoms, on the edge of the bank that fronts it, then more gradually to 4 fathoms, and there is *thought* to be no danger at the distance of half a mile from the shore. Some spots lie near the shore betwixt Johore Point and Point Romania, one of which has 7 fathoms on it, and 13 fathoms around; but there is said to be no less water on any of these detached spots.

THE ROMANIA ISLANDS, fronting the point of this name, are six in number; the westernmost or largest one is composed of two islands very near each other, joined by a reef. The Northernmost and S. Easternmost are two barren rocks, but the others are covered with trees; they extend about $2\frac{1}{2}$ miles N. E. and S.W., the largest being within a mile of the point, and the nearest to it. There is a rock, about 12 feet above water, near the south point of South Island, and a reef of straggling rocks extending to the eastward, which are bold to approach on the south side: there is also a rocky patch with $3\frac{1}{2}$ fathoms on it, about $1\frac{1}{2}$ miles South from Point Romania, and the same distance S. S.W. from the S.W. or largest island.

Romania Islands and rocks.

The Whale's Crown, a rock scarcely visible at high tide, lies three-quarters of a mile, or more, to the eastward of South Reef, having 7 fathoms close to it, and 8 or 9 fathoms around. There is a shoal S.W. from the northernmost islet about a cable's length; the other rocks amongst these islands are mostly above water, and there are 7 fathoms between South Reef and the islands; there is also deep water around the large island, and betwixt it and the others, with soft bottom, excepting near the rocks. South Reef extends N. E. and S.W. about three cables' lengths; from its S.W. point, the bluff, next to Point Romania bears N. by W. $\frac{3}{4}$ W., Barbucit Hill on with the North Hump

of the Large Island W. by N. ¼ N., and the point of Watering Island West, having on it a remarkable green tree.

Little Inner Channel.

LITTLE INNER CHANNEL, formed between Point Romania and the islands, may be considered safe for small vessels with a leading wind, and forms a good harbour in the South-west monsoon, the bottom being all soft. Capt. Owen, in H. M. brig Seaflower, found no less water than 5 fathoms in the *fair way* of the northern part of the channel, which appeared clear, and of width sufficient for small ships; other navigators have found 4¼ or 4½ fathoms at low water, in some places. Point Romania is bold to approach, having 4 fathoms within 30 yards of it, 7 fathoms a little farther out, deepening to 12 fathoms towards the largest island, which is rather more than half a mile distant from the point. A ship entering the channel from the southward, or leaving it, may borrow towards South Reef and the largest island, where the depths are greater than near the main; and the best track betwixt it and the other islands is about mid-channel, or rather nearer to the islands, where the depths are generally from 5 to 9 fathoms.

Contiguous coast.

There is an excellent watering river close round the Rocky Point, about 4 cables' lengths to the northward of Point Romania; the country abounds with various kinds of timber, wild elephants, buffaloes, moose-deer, hogs, guanas, monkeys, peacocks, &c., with oysters upon the rocks; but it is not inhabited hereabout. Near Romania River there is a considerable extent of forest, which, being without much underwood, is easily penetrated; but in other parts the woods are generally impervious.

Great Inner Channel.

GREAT INNER CHANNEL, bounded on the west side by the South Reef, the Whale's Crown, and a Sunken Rock about three-quarters of a mile to the N. E. of the latter, and bounded to the eastward by the southern extremity of Romania Outer Reef, is about 2¾ miles wide between these dangers; it was little known to Europeans, until Captain Ross surveyed these channels and dangers in 1818, although formerly used by Chinese junks and coasting vessels.

This channel is safe in day-light, by keeping 1½ miles, at least, to the eastward of Romania Islands, to give a berth to the dangers near them; and not increasing the distance from the islands above 3 or 3¼ miles, to avoid the S.W. extremity of the Outer Reef. The best track is to keep in mid-channel, about 2 miles from the islands, until the northernmost island bears W. S.W., then the channel is clear from the Outer Reef to the coast, and about 5 miles wide. The soundings throughout this channel, being generally uneven, do not answer as a guide; but they are usually from 7 or 8 to 10 or 11 fathoms, both in mid-channel, and near the dangers on either side, excepting a patch of 5 fathoms about a mile W. by N. from the S.W. end of the Outer Reef, and bearing E. by N. from the northernmost island 2½ miles.

If the wind be adverse when proceeding through the southern part of this channel, do not approach the Outer Reef nearer than to bring Pedra Branca S. E., or on the transit line between it and False Barbucit Hill; nor approach Romania Islands and their adjoining dangers nearer than to bring Pedra Branca E. S. E. ½ S., or on a transit line* between False Bintang Hill and the *North* Point of Romania, which is situated about 4 miles to the northward of True Point Romania.

* My large Plan of these dangers and the soundings around them, in the entrance of Singapore Strait, exhibits these transit lines or marks for the channel.

ROMANIA OUTER REEF is formed of detached spits of sand and patches of coral rock, on which the least water appears to be $2\frac{3}{4}$ fathoms; there are gaps of deep water, from 6 to 10 fathoms, betwixt some of them. Romania Outer Reef.

The patch of the outer reef nearest to Pedra Branca bears N.W. by N. from it $4\frac{1}{2}$ to $4\frac{3}{4}$ miles, and is steep to, and dangerous, having on it 18 feet rocks. On this patch, the Anna struck in December, 1800: with the wind N. Westerly, rounding the edge of the reef very close, in soundings from 12 to 9, and once 7 fathoms, a strong ebb tide running to the northward, horsed us amongst the eddies upon the reef, and we had several casts of 7 fathoms. The outer edge of it, where the ship touched the rocks in hauling off the reef, although drawing only 19 feet water, formed a steep wall, which was very conspicuous by the deep blue water outside, and the white discoloured water within. She took a considerable careen by the fresh wind and strong tide, and grazed over the rocks in 12 fathoms the first cast, Pedra Branca bearing then S. S. E. $\frac{3}{4}$ E. about $4\frac{3}{4}$ miles, southern island off Point Romania W. S.W. $\frac{1}{4}$ S., south point of the largest island W. by S. $\frac{1}{4}$ S., and its southernmost hump in one with the South Cape or westernmost point of Romania. A few cables' lengths to the southward of this dangerous patch the depth increases to 16 and 17 fathoms, and it is thought to be the S. Westernmost danger of the outer reef.

To the N. Eastward of the patch last mentioned there are several others, with 3 and $3\frac{1}{2}$ fathoms on them: the outermost of these, among which H. M. S. Panther got embarrassed, are extensive, and their southern part bears from Pedra Branca N. by W. $\frac{1}{2}$ W. to N. N.W., distant 5 or $5\frac{1}{2}$ miles; they stretch from thence to the northward 1 or $1\frac{1}{2}$ miles, and have 9 and 10 fathoms close to them on the East and S. E. sides. Another spit, to the N. Westward of these, bears N. N.W. from Pedra Branca, and E. by N. from Barbucit Hill; between them, the ship General Baird passed, in 6, 8, and 10 fathoms water.

The northernmost patch of Romania outer reef is in lat. 1° 31′ N., distant from the coast abreast about 10 miles; from Bintang Hill it bears N. 5° W., from Pedra Branca N. 7° E., distant 11 miles, and about the same distance from the northernmost island off Point Romania; from the largest of the Romania Islands it bears N. 50° E., from Barbucit Hill N. 63° E., and about E. $\frac{1}{2}$ N. from False Barbucit Hill. There is probably no danger on this patch, although the Seaflower had overfalls of 6 and 7 fathoms, hard sand, on it; but the Hornby shoaled suddenly from 13 to 10, 7, 5, and $4\frac{1}{2}$ fathoms upon it, in coming from the northward, and deepened in hauling out to the eastward, as fast as the lead could be hove, to 5, 7, 10, 11, 12, 13, and 14 fathoms; it ought, therefore, to be avoided, as $4\frac{1}{2}$ fathoms is too little water for a large ship when there is much swell. Betwixt this northernmost patch of the reef and the opposite coast there is no danger, the depths inside of it being generally from 10 to 15 fathoms; and there seems to be a channel of deep water to the S.W. and Southward, between it and the other more connected patches of the reef. Along the inner edge of the outer reef the soundings are mostly 7 or 8 fathoms, and 9, 10, or 11 fathoms about half a mile from it, and from thence well over towards the coast nearly the same depths, excepting that 7 or 8 fathoms are got in some places.

FALSE BARBUCIT HILL, in lat. 1° 30′ N., is a low sloping hill near the sea, appearing like a tope of trees a little more elevated than the adjacent coast, which is all rather low and woody to the northward of Barbucit Hill. The False Hill bears from Pedra Branca N.W., and being discernible much sooner than the other, during False Barbucit Hill.

hazy weather, answers as a guide in coming from the northward towards the northern extremity of the outer reef.

Pedra Branca.

PEDRA BRANCA, or White Rock, lying in the middle of the entrance of Singapore Strait, is in lat. 1° 20′ N., lon. 104° 25½′ E., or 2° 10½′ E., from Malacca, and 9 miles West from Pulo Aor, by mean of many chronometers:* from the largest island off Point Romania, it bears E. by S. ½ S., distant about 8 miles, the same distance from the shore of Bintang, and is in one with the centre of Bintang Hill bearing S. by E. ¼ E. It is small, of white appearance, by birds' dung, and not much elevated at high tide, but may be seen 9 or 10 miles from the quarter-deck of a large ship, being just visible when Point Romania bears North, distant 3 or 4 miles; in the night, it cannot be discerned until close to. On the north and N.W. sides, Pedra Branca is steep to, having soundings of 17 fathoms close to the rock, and 30 to 36 fathoms near it, decreasing to 16 and 17 fathoms to the northward, close to the edge of Romania Reef. To the southward it is dangerous to approach, on account of two ledges of rocks, called the S. E. Rocks, lying near to each other, about a mile or more to the S. S. Eastward off it, and which are very little above the surface at high water. But the S.W. Rocks are the *principal* dangers, when proceeding through the South Channel; they consist of three pointed rocks very little detached from each other, with 8 and 9 fathoms close to, and betwixt them, 16 or 17 fathoms at a very small distance in the stream of them. They bear from Barbucit Hill S. E. by E. ¾ E., from Pedra Branca S. by W. ¼ W., distant about 2½ miles, are not visible until the ebb has been made some time, and they are nearly covered before the stream of flood begins to run; from 16 and 17 fathoms close to this danger, the depths are rather irregular to 9 or 8 fathoms, within 2 miles of the Bintang shore.

Adjacent dangers.

Bintang Hill.

BINTANG HILL, in lat. 1° 5′ N., lon. 104° 29′ E., bearing S. by E. ¼ E. from Pedra Branca, distant about 5½ leagues, may be seen in clear weather 14 leagues, and answers as a mark in approaching the entrance of the strait from northward. When viewed from that direction, it forms a saddle, and adjoining to it, on the north side, there is a small conical hill called False Bintang Hill, or Little Hill, the summit of which is central with the saddle of the large hill bearing S. 8° E. When the centre of the Saddle bears South (*true*), the summit of the Little Hill is just open with the western shoulder of the Large Hill, and this mark or bearing of Bintang Hill is a safe guide to carry a ship to the eastward of, but pretty near, the outer reef of Romania.

The north side of Bintang Island extends nearly E. ½ N. and W. ½ S. about 6 leagues, forming a concavity in the middle of this space; and, like most of the other land bounding the Strait of Singapore, it is covered with trees, and, excepting the hills inland, not much elevated. About a mile from the shore, N. Eastward of the point that bounds Rhio Strait on the east side, there is a small island, with other rocks or islets near the shore, which should not be approached too closely, as a patch, with only 2 fathoms on it, lies 1½ miles off the shore of Bintang, and bears S. by W. ½ W. from Pedra Branca: nor should the Bintang shore be borrowed on, in general, under 10 or

* By many chronometric admeasurements, in different voyages to China, corresponding within a mile of each other, I made it in this longitude; but Captain Ross made it only 7¼ miles West from the East Peak of Pulo Aor. Captain Keith Forbes landed on the S. E. part of Pedra Branca, April 13th, 1813, and had 17 fathoms close to it, which was covered with oysters at the water's edge, from whence a small boat might be filled in an hour.

9 fathoms, when ships are proceeding through the South Channel, for the soundings near it are often irregular, and do not afford a sufficient guide.

Bintang is the largest island on the south side of Singapore Strait; Pulo Battam, on the west side of Rhio Strait, is also of considerable size, and from it a chain of islands, separated by narrow guts, extends westward nearly opposite the Rabbit and Coney.

Eastern Bank.

THE EASTERN BANK extends from the N. E. part of Bintang about North and N. by W. 7 leagues, having soundings upon it generally from 10 or 11 to 13 and 14 fathoms. To the distance of 2 or 3 leagues from the N. E. part of Bintang, the depths on it are 10 to 12 fathoms; East from Pedra Branca about 2 leagues they are irregular, 16 or 18 fathoms in some places, and 11, 12, to 14 fathoms within 1 or 2 miles of that rock on the east side. To the E. N. E. and N. E. of Pedra Branca, about 3 or 4 leagues, the soundings are generally pretty regular, 13 to $14\frac{1}{2}$ fathoms, sand and gravel: and in standing off the bank to the eastward they gradually increase to 20 fathoms, at 2 or 3 leagues' distance. On the northern part of the Eastern Bank, in lat. 1° 32′ N., there is a shoal patch, the least water on it 8 fathoms, hard bottom, to 10 and 11 fathoms the general depth. It is of small extent; Bintang Hill bears from it S. $\frac{1}{2}$ W., Barbucit Hill about W. S.W., False Barbucit Hill W. $\frac{3}{4}$ S., and the northernmost patch of Romania outer reef W. $\frac{1}{2}$ S. or W. by S., distant 4 or 5 miles. Ships getting soundings of 8 to 10 fathoms on this patch of the Eastern Bank, during hazy weather, sometimes think they are on the northern patch of Romania outer reef, and then haul more to the eastward, which renders them liable to fall to leeward of the strait.

Patch of 8 fathoms.

Soundings near Romania Reef, and in the entrance of the strait.

THE SOUNDINGS are mostly 13 to 15 fathoms, a little irregular in some parts, to the distance of 4 or 5 miles northward from the northernmost patch of Romania outer reef, and from the patch of the Eastern Bank; and they continue nearly the same until within 3 or 4 miles of the coast: farther to the northward, the depths increase gradually towards Pulo Aor, with a regular decrease contiguous to the main land.

Between the shoal patch of the Eastern Bank and the northernmost patch of the reef the soundings are a little irregular, from 13 to 17 fathoms. Farther to the southward, between the Eastern Bank and the reef, the water deepens to 19, 20, and 22 fathoms; and when Pedra Branca is approached, soundings of 32 to 36 fathoms are found near it to the northward and north-westward, decreasing in the north side of the channel to 17 or 16 fathoms, sand and gravel, near the southern patches of Romania Reef. To the south-westward and westward of Pedra Branca, the soundings near it are 34 to 28 fathoms; but there are some small banks W. by S. and W. by S. $\frac{1}{2}$ S. about 5 miles from it, with 10 to 15 fathoms water on them, and 20 to 30 fathoms around. Some ships, when attempting to pass out of the strait between Pedra Branca and that reef in the night, have been in great danger, by getting shoal soundings in this position, and mistaking them for the soundings on the edge of Romania Reef. From Romania Islands westward the strait is clear to Johore Shoal, and the soundings are 18 to 25 fathoms in the fair track, rather more than mid-strait towards the northern shore, decreasing regularly to the latter. In mid-strait the depths are from 26 to 32 fathoms, decreasing to either side; and the only danger to be avoided in making long tacks is the Pan Shoal, within the entrance of Rhio Strait, which has been described in the directions for sailing through that strait; but it is out of the direct track of ships proceeding through the Strait of Singapore.

Tides. THE TIDES near Pedra Branca, and contiguous to the Romania reefs, are frequently very irregular, in time, velocity, and direction. In the strength of the North-east Monsoon, when the current runs to the S. S. Eastward from Pulo Aor across the equator, the flood sometimes runs into the entrance of the strait to the south-westward, 10 or 12 hours at a time; but the ebb generally runs with the greatest velocity, and of longest duration, in both seasons, particularly in the South-west Monsoon. About the full and change of moon, the ebb often sets out strong during the night, for 10 or 12 hours together, but not very rapidly in the first and latter part: at other times it is changeable, and not strong. Betwixt Pedra Branca and the edge of Romania Reef the strength of the ebb runs generally about N. E. by N., when regular, and the flood in the opposite direction; but I have sometimes observed the tide to set all round the compass during the night, and once N. N.W. 2 miles an hour, directly over the reef. About the northern patches of the reef the tides have also been found at times very irregular, setting East and West, and all round the compass; but their general direction in that part is nearly North and South, or within two points of the meridian. In the South Channel, betwixt Pedra Branca and Bintang, the flood sets about W. S.W. and W. by S., and the ebb in the opposite direction along the Bintang shore, but subject to irregularities.

On full and change of moon, it is high water at Pedra Branca about 11 hours, when any regularity is preserved by the tides. The velocity of the ebb, when strongest, is from 4 to 4½ miles an hour, in the entrance of the strait and between Point Romania and Pedra Branca; but the flood is not so strong. The velocity of the tides during the neaps is from 2 to 3 miles an hour, frequently very irregular.

North Channel. NORTH CHANNEL, formed between Pedra Branca and Romania Reef, was formerly in general use; although not quite so wide, nor so safe in the night, for running out of the strait, as the South Channel along the Bintang shore. Having passed Johore Shoal about mid-strait, and intending to proceed out of the strait through the North Channel, steer for Pedra Branca, if day-light. With the wind to the southward, keep well out from the Romania shore, and endeavour to make Pedra Branca, bearing E. N. E., or E. by N., then borrow towards it with the ebb tide, to give a proper berth to the edge of Romania Reef, in steering out of the strait; and do not approach the reef under 16 or 17 fathoms when Pedra Branca bears from S. E. to South, particularly with a southerly wind. After Pedra Branca is brought to bear S. S.W., edge away to the north-eastward, observing to keep it to the westward of S. S.W. whilst in sight; or having brought the centre of Bintang Saddle Hill, *if visible*, to bear South, steer to the northward along the edge of the reef, keeping *that* bearing. The summit of the False or Little Hill will *then* be open with the western shoulder of the Large Saddle Hill, which will carry you to the northward between the shoal patch of the eastern bank and the northern patch of the reef, in soundings from 16 to 13 fathoms. The centre of Bintang Hill must not be brought to the eastward of South, in passing the N. Eastern part of the reef; for if it bear S. 3° E., you will get upon the north-easternmost patch of the reef, where there are overfalls of hard ground from 6 or 7 to 4½ fathoms.

With a fair wind, or if night is approaching after passing Pedra Branca, or if thick weather be coming on, do not round the reef close, but continue to steer about 3 leagues to the N. E. before a direct course is pursued for Pulo Aor.

If not so far advanced as to discern Pedra Branca before dark, haul in towards the land a little to the westward of Point Romania, and anchor in from 10 to 18 fathoms,

during the *night*; for it is *then* dangerous to run out betwixt the reef and Pedra Branca, unless the weather is settled and clear, the breeze favourable and commanding, and the velocity and direction of the tide known at the time; because the soundings to the westward of Pedra Branca are irregular in some places, and not a certain guide.

If, however, you are resolved to run out during a *clear* night, which may sometimes be done by those well acquainted with the channel, pass Point Romania about 4 or 5 miles' distance, in soundings of 18 to 22 fathoms, and endeavour to preserve these depths in rounding the reef, borrowing a little on either side the channel, as the prevailing wind or tide render advisable. When abreast of Pedra Branca, from 18 to 22 fathoms are good soundings with a fair wind, and you will then be much nearer to the reef than to the former. Be careful on the ebb tide, even with a commanding breeze, not on any account to shoal under 17 or 18 fathoms, until Pedra Branca is passed, and bearing to the westward of South; for with a strong ebb tide, you may be drifted on the edge of the reef without warning, as the distance, from 20 to 12 fathoms, is very little, and there are 13 and 12 fathoms close to some of the dangerous patches. After passing Pedra Branca, continue to steer 2 or 3 leagues to the eastward, to make certain of being clear of the outer patches of Romania Reef, then a direct course to the northward may be pursued, towards Pulo Aor.

SOUTH CHANNEL, bounded on the North by Pedra Branca and its adjoining ledges of rocks, and by the Bintang shore on the South, being rather wider than the North Channel, is preferable for sailing through in the night, although until recently it was little known.* The depths in the South Channel, although not very regular, are usually 7, 8, and 9 fathoms near the shore of Bintang, from 10 to 12 fathoms in mid-channel, and 15 or 16 fathoms near the ledges of rocks to the S. E. and S. Westward of Pedra Branca. The depths in this channel are much greater to the westward of the meridian of Pedra Branca, than upon, or to the eastward of its meridian, which ought to be kept in remembrance, when passing through in the night. South Channel.

In proceeding out of Singapore Strait, if not so far advanced as to discern Pedra Branca before the evening, steer for the South Channel, by hauling towards the N.W. point of Bintang, if the wind be southerly, observing to give a berth to the small island and patch of 2 fathoms that lies about $1\frac{1}{2}$ miles off that shore. After passing this small island and the patch in 14 or 15 fathoms, keep within 3 or $3\frac{1}{2}$ miles of the Bintang shore, particularly when abreast the ledge of rocks to the S.S.W. of Pedra Branca, that bounds the channel on the north side in this part, which is nearly 6 miles wide betwixt the ledge and the Bintang shore. There are 16 and 17 fathoms very near these rocks, and when abreast of them, from 14 to 12 fathoms is a safe track; but the best guide is, to take the soundings from the Bintang shore, hauling in occasionally to 12 fathoms, but not under that depth in the night. The bottom in 8 fathoms contiguous to the shore is often hard sand: but in 10 and 11 fathoms, about mid-channel, it is clay in some parts, or sand and gravel mixed with clay. You may stand towards the Bintang shore in some places to 8 fathoms in working, during the day, and out to 13 or 14 fathoms; but in the night, do not deepen to more than 13 fathoms, when abreast the ledges of rocks adjacent to Pedra Branca.

* The Rooke frigate went through it in 1700. Afterwards, it seemed to have been concealed from the knowledge of Europeans for a great length of time, for English navigators knew of no safe passage, until Captain J. Elmore, in the ship Gratitude, went through in 1784. It is now much frequented, particularly by ships going out, or entering the strait in the night.

About S. by E. $\frac{3}{4}$ E. from Pedra Branca, Captain Cowman, when passing out of the Strait of Rhio by the South Channel in the night, had $5\frac{1}{2}$ fathoms on a bank about $2\frac{1}{2}$ miles from Bintang, with 7 and 8 fathoms close around it.

Captain J. Lamb, of the Palmira, working out through the South Channel, in May, 1821, during the night, put the helm down in 10 fathoms, to stand off from the Bintang shore, but owing to a strong tide running out, the ship missed stays, and although she wore quickly round, she shoaled to 6 fathoms: steered then North, with a light breeze, for about half an hour, and was swept along shore by the rapid tide, over very irregular ground, the depths varying from 9 to 6 fathoms at a cast, and once had $4\frac{3}{4}$ fathoms. During this time, Bintang Saddle Hill was hidden by the low land, and when seen over the land after standing out to 10 fathoms, it bore S. by E. $\frac{1}{2}$ E. From the N. E. extremity of Bintang, a reef projects to a considerable distance, which ought not to be approached too close.

When proceeding out by night in clear weather, to prevent getting too near the Bintang shore, Captain Lamb observes, that the summit of Bintang Hill should be kept visible over the low land, and when brought to bear S. by W., you may *then* edge off to the northward, if certain that the ebb tide is running out of the strait. But if the wind is unsteady, and the direction of the tide unknown, continue to steer N. Eastward for some time, until well outside Pedra Branca and Romania Reef, to prevent the flood from drifting you near either of these dangers.

Anchorage.

You may anchor in the South Channel conveniently day or night, the depths in mid-channel being generally 11 or 12 fathoms, and near the Bintang shore, 9 to 7 or 6 fathoms irregular, hard sand, or sand and clay.

Passage by Rhio Strait recommended when the North-east Monsoon blows strong.

Ships bound from Singapore to the coast of Borneo, or intending to proceed by the Eastern Passage towards China, are frequently several days working out of Singapore Strait, when the North-east Monsoon blows strong into it at times, in part of November, December, and January. It may, therefore, be advisable for a ship, after reaching the entrance of Rhio Strait, and finding the weather dark and cloudy, with a strong gale blowing from the N. Eastward, not to lose time working out to the eastward with the ebb tide, and anchoring on the flood; for in such case, she may save considerable fatigue to the crew, wear of ground tackle, and probably some time, by proceeding to the S. Eastward through Rhio Strait. Here, she will have smooth water and favourable breezes, and when through it, she may haul to the S. Eastward between Geldria Shoal and Lingin, and then steer eastward for the Carimata Passage, as the wind generally draws to the northward when the equator is approached.

PASSAGE WESTWARD THROUGH SINGAPORE AND MALACCA STRAITS.

To sail from Pulo Aor to Singapore Strait.

DURING the strength of the North-east Monsoon, the current sets generally to the southward or S. S. Eastward, between Pulo Aor and the east end of Bintang, by which, ships running for Singapore Strait, in thick weather, are liable to fall to the southward of its entrance, if proper allowance be not made. If at anchor under Pulo Aor, you ought not to weigh until past midnight, particularly with a fresh breeze, that the ap-

proach be not too close to the entrance of the strait before day-light; and the same rule may be observed if you heave to near the island in the evening, to let some hours pass over prior to bearing away for the strait.

Departing from Pulo Aor, steer to bring it to bear about North, when disappearing: if the weather be clear, Bintang Hill and Pulo Aor may be seen together, but this seldom happens. Do not bring the centre of Bintang Saddle Hill to the eastward of South, until Pedra Branca is visible from the deck; for with the hill bearing South, you will not pass far outside the N. Easternmost patch of Romania Reef; but it is a safe bearing if the compass be true, and will lead down in soundings of 16 to 13 fathoms.

In hazy weather, Bintang Hill is seldom visible until you have passed the eastern part of the reef, in which case, having Pulo Aor disappearing about North, a course S. by W. to S.S.W. may be requisite to counteract the S. Easterly currents, or the ebb tide setting out of the strait to N. Eastward. The depths will decrease regularly in steering southward, and the low land will *probably* be seen to the westward, when in 20 or 18 fathoms; coast it along at 3½ or 4 leagues' distance, until False Barbucit *low sloping* hill is discerned, appearing a little way from the sea, like a clump of trees more elevated than the others. When this hill bears W. S. W., 15 fathoms is the fair track; with it bearing W. ¾ S. and W. ½ S., overfalls from 16 to 13 fathoms may be experienced, or probably less water, being then about the parallel of the N. Easternmost patch of Romania Reef, and the shoal patch, with 8 to 10 fathoms, on the Eastern Bank.

Having coasted along at 3½ to 4 leagues' distance, with the land distinctly in sight from the deck, and having brought False Barbucit Hill to bear about W. by S., you are approaching the N. Easternmost patch of the reef: and with this hill bearing about W. ¾ S., if a cast of 10, 9, or 8 fathoms is got, but uncertain whether these soundings are on the N. Eastern extremity of the reef, or on the shoal patch of the Eastern Bank, haul to the S. Eastward until in 14 or 15 fathoms. Steer then South about 2 miles, or until False Barbucit Hill bears West, which will place you to the southward of the shoal patch of the Eastern Bank, and abreast the N. Eastern extremity of Romania Reef; you may then haul in to the W. S. Westward, and get a cast of 10 or 11 fathoms, and will then be certain that these soundings are on the edge of the reef; but, in doing so, heave the lead quick, and if there is less than 10 fathoms, haul out directly eastward into 15 or 16 fathoms, and then steer along the S. Eastern edge of the reef in 16 or 17 fathoms. If when Pedra Branca is discerned, it bear S. S.W., you are clear to the eastward of the reef; but if it is seen bearing S. by W. you will be close to, or upon the edge of shoal water. Having steered round the reef so far as to bring Pedra Branca to bear S. by W., do not come under 16 or 17 fathoms in passing along the southern part of the reef; for it is steep from 16 to 12, and from 12 to 3 fathoms at a cast, on some of the shoal rocky patches, with Pedra Branca bearing from S. E. ½ S. to South.

To enter Singapore Strait by the North Channel.

Having passed betwixt Pedra Branca and the edge of Romania Reef, in any depth from 17 to 62 fathoms, as the tide and the prevailing wind render expedient, steer to the W. S. Westward nearly in mid-strait, to give a berth to Johore Shoal. Although Pedra Branca is steep to on the north side, it should not be approached very closely, for navigators are liable to estimate their distance from it sometimes greater than the truth; and, as the tide runs strong, ships are in danger of being drifted quickly towards it without warning, if they borrow near it in light breezes.*

* The Shah Munchah, a large and valuable ship from China bound to Bombay, standing into the strait at

To enter by the Great Inner Channel.

If a ship during thick weather happen to get too near the coast to the westward of Romania Outer Reef, she may proceed through the great Inner Channel, by keeping about 3 miles off shore, and when within this distance of the northernmost Romania Island, keep about 2 miles from the east side of this and the other islands, in steering down to the southward, attending to the preceding remarks given for this channel.

To enter by the South Channel.

THE SOUTH CHANNEL is very convenient for ships which fall to leeward of Pedra Branca during thick weather, as they have no occasion to anchor outside. If the wind be N. Easterly, they may run down until within 4 or 5 miles of the Bintang shore, then haul to the westward, and pass nearly in mid-channel between it and Pedra Branca, in 11 to 13 fathoms water. With the wind at N.W. or North, it is advisable to borrow towards the Rocky Ledges to the S. Eastward and S.Westward of Pedra Branca, and endeavour to pass rather nearer to these than to the Bintang shore, observing not to approach too closely to the S.W. rocks, as they are covered at half-tide. By borrowing towards the weather side of the channel, ships will be enabled to reach well into the entrance of the strait, and if the wind is scant and the tide setting out against them, they will have smooth water and good bottom for anchorage, until the tide of flood is favourable for proceeding to the westward.

Directions for ships which fall to leeward.

Some ships have been set to the southward of the entrance of the strait by the current, and having mistaken the high land on the west end of Pulo Panjang for Barbucit Hill, and one of the rocky islets for Pedra Branca, they were obliged to proceed round Bintang, and enter the Strait of Singapore by Rhio Strait; whilst others have passed to the westward through the Straits of Durian. Ships which happen to fall to leeward of the entrance of Singapore Strait ought not to go between Bintang and Panjang, that passage being interspersed with many islets and rocky shoals, rendering it unsafe for large ships, if boats are not kept a-head to sound. In such case, it is advisable to pass outside of Panjang, and then steer to the S. Westward betwixt the S. E. end of Bintang and the adjoining islands, with a boat sounding a-head, as there are some reefs and sand-banks, covered at high water. The S. Easternmost Island off Pulo Panjang is Ragged Island, in lat. 0° 56½′ N., lon. 104° 56′ E., and Saddle Island, bearing from the former S.W. ¾ S., lies in lat. 0′ 48′ N. Monkey Island, fronting the south coast of Bintang, is of considerable extent; after passing between it and Low Island, which lies to the eastward, ships intending to touch at Rhio, should haul to the N.W. for that strait; otherwise they may steer to the westward between the islands, to proceed through the straits of Durian, and enter into Malacca Strait at the Carimons. Persons unacquainted, in passing amongst these islands, ought not to neglect to keep a boat sounding a-head, to examine the channels.

Pulo Panjang, and other islands.

Passage westward through Singapore Strait.

HAVING ENTERED THE STRAIT OF SINGAPORE, by either channel, steer to the westward in mid-strait, or at any discretional distance from the north shore, until Johore Shoal, the first danger, is approached; keep then about mid-strait in passing it, and do not borrow nearer it than 18 or 17 fathoms, as the water shoals suddenly under 16 or 17 fathoms; the island St. John kept W. by S. is a fair bearing in steering to the westward. When the east end of Singapore Island, or the Red Cliffs, bear about N. by W., you are clear to the westward of the shoal; the northern shore is then safe to approach as far as St. John, but the south side of the strait, being rocky, ought to be avoided.

mid-day, with a strong flood tide and scant wind, stood too near Pedra Branca before tacking, and was totally lost, by the tide horsing her upon the rock whilst in stays.

If the wind and tide be unfavourable, or the weather very dark in the night, you may anchor in 14 to 18 fathoms, towards the north shore, or under the N.E. side of St. John, in Singapore Road; otherwise, pass the south point of that island as close as the wind may render proper, and steer W. S.W. and W. by S. to round the Rabbit and Coney. It is best to keep nearest the north side the channel in this track, to avoid the Buffalo Rock, and the deep water and rocky bottom towards the south shore; but care must be taken to give a berth to the reef off the S.E. end of Middle Island. The south end of St. John kept N. E. by E. ½ E. leads clear of that reef, or the south end of Barn Island W. by S. ½ S.; and either of these are safe bearings to carry you along in the north side the channel until the Coney is approached, which may be rounded at the distance of 2 or 3 cables' lengths, if the wind is northerly.

When round the Coney and the south point of Barn Island, steer W. N. W. to pass betwixt Tree Island and the Sultan Shoal, and from thence between Tanjong Boulus and Little Carimon. The south end of Barn Island kept E. by S. will carry you about mid-channel; with it E. ½ S. you will be near Tree Island; and if E. S. E., you will approach the Sultan Shoal. After passing Tree Island, steer about W.N.W., hauling up a little either way, as the wind or tide may require, to pass rather nearer than mid-channel towards Tanjong Boulus, which ought to have a berth of 2 miles, on account of the shoal mud bank that encircles it; it is steep from 16 fathoms. *From thence to Pulo Pisang.*

From abreast Pulo Cocob entrance, steer about N.W. towards Pulo Pisang, observing not to approach Pulo Cocob, or the mud bank that stretches along the coast between it and Pulo Pisang, under 11 or 12 fathoms; nor bring the outer part of the latter island to the westward of N.W. With a fair wind, keep in 17 to 19 fathoms about mid-channel, and do not borrow under 13 fathoms on either side, when working in the night.

When Pulo Pisang is approached, pass outside of it at 3 or 4 miles' distance, if the wind be favourable, then steer about N.W. by W., which is a fair channel course to clear Formosa Bank; or if Pulo Pisang is kept about E. S. E., it is a proper bearing throughout the channel. In working you may stand in to 10 or 12 fathoms on the edge of the Shore Bank, and off 2 or 2½ leagues to 18 or 20 fathoms; the soundings on the Fair Channel Bank will be a guide in crossing over it on each tack.

From abreast the bank off Formosa River, at 3 or 4 miles' distance, steer N.W. by W. for the Water Islands; borrowing towards the Malay coast occasionally to 12 or 13 fathoms, there being no danger in this part of the strait from side to side. After rounding the Outer Water Island, at any convenient distance, if you do not intend to touch at Malacca, steer about N.W. and N.W. by W. for Cape Rachado, in soundings from 20 to 16 fathoms, keeping within 6 or 7 miles of the Malay Coast: but it must not be approached nearer than 3 miles, in passing the rocky shore between Tanjong Clin and Cape Rachado. This cape may be passed within 1 or 2 miles, and from thence steer N.W. by W. for Parcelar Point, observing not to bring Cape Rachado to the southward of S. E. by E. ½ E. in standing towards the shoals in the bight, nor to the eastward of E. by S. ½ S. in passing the eastern patches of the South Sands, when the cape appears like an island. The soundings are irregular, but generally from 25 to 27 fathoms about mid-channel, 17 and 18 fathoms near the shoals in the bight, and 35 to 40 or 44 fathoms near the dangerous patches of the South Sands. Cape Rachado kept about E. S. E. is a fair bearing in passing through the channel towards Parcelar Point, and when this point is approached, it may be passed at 3, 4, or 5 miles' distance; but the coast forming the bight between it and Cape Rachado must not be approached nearer than 5 miles, on account of Bambek Shoal. *Formosa Bank and Water Islands.* *Cape Rachado.*

Parcelar Point.

From Parcelar Point, steer about N. W. ½ W., keeping 3 or 4 miles off shore, to avoid the shoal bank that lines the coast abreast of Parcelar Hill, and do not borrow on the edge of it under 17 or 18 fathoms, for it is very steep under these depths. In working, you may stand about 3 leagues from the land, into 24 or 25 fathoms, and will probably shoal to 13 or 14 fathoms in crossing the narrow bank in the fair channel.

To sail from the land of Parcelar, through the East-and-West Channel.

HAVING brought PARCELAR HILL to bear about E. by N. ½ N., you may, with a southerly wind and ebb tide, edge away for the East-and-West Channel, betwixt the North and South Sands, gradually drawing Parcelar Hill to bear about E. ½ N., by the time the low land of Callam is nearly disappearing from the deck. If the hill is clouded, keep the body of Pulo Callam, or that part of land to the westward of the strait, bearing about N. E. by E. ½ E., which will carry you well clear of the Two-and-Half Fathoms Bank: and when the low land disappears from the deck, you have passed it, and may steer along the edge of the North Sand about W. by N., altering the course as the wind or tides require, to keep in from 14 to 16 or 17 fathoms. When clear to the westward of the Two-and-Half Fathoms Bank, Parcelar Hill may be brought to the southward of East, in steering along the edge of the North Sands; and those who are a little acquainted may pass through this part of the channel in the night, if the weather is clear and the set of the tide known, by taking the soundings from the edge of the North Sands, and hauling off occasionally when the depths decrease under 12 or 13 fathoms. With a southerly wind, keep about mid-channel, but care must be taken in the night not to approach the rocks off the Round Arroa; for if the Arroa is discerned with the glass or otherwise, haul immediately to the northward, to give a berth to these rocks, and you will deepen to 35 or 44 fathoms to the N. Eastward of the Long Arroa. From this situation, or from the western extremity of the North Sands, steer about North to make the Sambilangs, and do not approach these islands under 25 or 26 fathoms, when passing between them and Pulo Jarra in a dark night, on account of the rocks that lie to the westward of them; about 28 to 30 fathoms are good depths to preserve, in passing through this channel during the night.

From East-and-West Channel to the Sambilangs.

From the Sambilangs to Penang.

FROM the SAMBILANGS, steer to the N. N. Westward for Penang, giving a berth of 4 or 5 miles to Pulo Dinding in passing, to avoid the mud bank in the offing; and, afterwards, keep along the coast of Perah in soundings of 16 to 20 fathoms, about 3½ to 4 leagues off. In working, do not stand out farther than 25 fathoms, and tack from the edge of the shore bank in 10 or 11 fathoms; for the water shoals suddenly under these depths, rendering it necessary to keep the lead going quickly when near the edge of the bank. In the North-east Monsoon, ships bound to Penang, Bengal, or Madras, ought to be particularly careful to keep near the Malay side of the strait after passing Pulo Dinding; for strong N.E. winds, with a short sea, sometimes prevail in mid-strait, betwixt Diamond Point and Penang, making it difficult for ships which are in the offing to regain the eastern shore. Large ships bound into Penang ought not to attempt to pass through the South Channel, unless a good pilot is procured; but they should coast round the island, and proceed into the harbour by the North Channel.

Leaving Malacca Strait.

DEPARTING from, or having passed PENANG, whether bound to Bengal or to the coast of Coromandel, steer to pass outside the Ladda Islands, Pulo Bouton, and Junkseylon Head, at a moderate distance: if bound to Ceylon, the Malabar coast, or

other parts to the westward or southward, steer for the channel between Pulo Rondo and the South Nicobar, conforming to the directions already given for sailing *to* or *from* Malacca Strait.

CHINA SEA.

MONSOONS, TY-FOONGS, GALES, AND CURRENTS.

THE SOUTH-WEST MONSOON generally commences in the China Sea about the middle or end of April, and continues to the beginning or middle of October, liable to an acceleration or retardation of 12 or 15 days; it sets in rather sooner about the Gulfs of Siam and Tonking, and along the western coasts, than over to the eastward in the open sea, near the coast of China, or near the coasts of Palawan and Luconia. It also continues longer to the southward of Cape Padaran and Pulo Sapata, and along the coast of Palawan, in the southern part of the China Sea, than it does more to the northward; for southerly winds frequently prevail between Singapore Strait and Pulo Sapata until the 8th, 10th, or 15th of October, when the N. E. and easterly winds are blowing in the northern part of that sea. In September and in the greater part of October the winds off the north extremity of Borneo and the west end of Palawan generally blow strong from S. Westward, with dark cloudy weather and much rain. South-west Monsoon.

In May the winds are often light and variable in the open sea, and Easterly or S.E. winds are likely to happen for a day or two at a time, during the whole of the South-west Monsoon; particularly in the northern part of the China Sea, these winds are frequently experienced in both monsoons. About Formosa, and betwixt it and the China coast, N. Easterly winds often happen in July, August, and September.

The South-west Monsoon is strongest, and least liable to changes, in June, July, and August; in these months, and also in May, sudden hard squalls blow sometimes out of the Gulf of Siam, as far as Pulo Condor and Pulo Sapata. When dense clouds are perceived to rise, indicating the approach of these squalls, sail ought to be reduced without delay.

From the Gulf of Siam to Cape Padaran, the South-west Monsoon blows along the coast nearly parallel to it; and if close in, a faint breeze from the land is at times experienced in the night, succeeded by a short interval of calm on the following morning, occasioned by the influence of the sun. The monsoon breeze then sets in, and generally continues brisk during the day. These land and sea breezes prevail most on the coast of Cochin-China, from Cape Padaran northward to the Tonking Gulf; for the sea wind dies away almost every evening on this coast during the South-west Monsoon, and a land breeze comes off in the night, although not at a regular hour. This is followed by calms or faint airs, which frequently continue until noon; the sea breeze then sets in from S. Eastward.

In March and April there are land and sea breezes on the coast of Luconia, with fine weather; but after the South-west Monsoon sets in strong in June, and from that time until it abates in October, the weather is mostly cloudy; and the winds blowing from the sea upon that coast generally produce much rain. In June, July, and part of August,

there is, at times, much rain and cloudy weather all over the China Sea. On the south coast of China, the winds during the South-west Monsoon prevail frequently at South and S. S. E.

North-east Monsoon.

THE NORTH-EAST MONSOON usually commences in the northern part of the China Sea about the end of September or early in October; but in the southern part of this sea it seldom sets in steadily till November; light southern or variable breezes prevailing the greater part of October. The weather in some years is settled and fine, during September and October; for the North-east Monsoon does not *always* set in with a storm, although the equinox is a very precarious period, for within a few days of it storms are likely to happen,* and also with the setting in of the monsoon in October.

In November, the North-east Monsoon generally prevails; but it blows more steadily, and with greater strength, in December and January. The weather is frequently cloudy, with much rain and a turbulent sea, in these months; particularly about Pulo Sapata, and from thence to the entrance of Singapore Strait: there are also considerable intervals of fine weather. On the coast of Palawan the winds are very variable in October, November, and the early part of December, by which ships pass along that coast either to the N. Eastward or S. Westward, but the weather is often dark, rainy, and cloudy. The winds on the coast of Luconia are frequently variable during the North-east Monsoon, generally from the northward and N. Eastward; but they veer to N. Westward and westward at times, and then blow strong, with cloudy weather and rain. In the Gulf of Tonking, in November, there are sometimes faint land breezes close to the coast; but the North-east Monsoon prevails along the coast of Cochin-China, as far to the southward as Cape Padaran, generally from September or the early part of October, to the beginning or middle of April.

In February the strength of the North-east Monsoon abates; during this month and March it blows moderately, with steady weather all over the China Sea, inclining to land and sea breezes on the coast of Luconia. On the south coast of China, when the North-east Monsoon prevails, the winds blow mostly from E.N.E. parallel to the shore; they veer, and blow off the land at times, and also from the S. Eastward, but there are seldom any regular land or sea breezes on that coast.

Ty-foongs.

TY-FOONGS† are dangerous tempests, which occur in the northern part of the China Sea, along the southern and eastern coasts of China, near Formosa, the Bashee Islands, the north end of Luconia; also to the eastward of those islands, and betwixt Formosa and the Japan Archipelago. These tempests usually blow with the greatest fury near the land: as the distance is increased to the southward from the coast of China, their violence generally abates, and they seldom reach beyond lat. 14° N., although a severe gale has been experienced at times two or three degrees farther to the southward.

* September 22nd, 1786, near the Grand Ladrone, the Gunjavar encountered a storm, which continued several days, and disabled, and obliged her to take shelter in Galong Bay, at the south end of Hainan, where she remained six months. The Warley, September 22nd, 1803, off St. John, experienced a tempest, that drove her to the Taya Islands, blew away her top-masts, and did other damage. The Bombay, late in September, 1789, had a tempest close to St. John, which obliged her to cut away her main-mast and run on shore.

Several of H. M. ships, and those belonging to the Company, have been dismasted by these equinoctial ty-foongs, which generally happen within eight or ten days of the equinox; and in these tempests, the Talbot, Ocean, True Briton, Anna, and other ships, have foundered, with all their crews.

† Ty-foong, in the Chinese language, signifies *great wind.*

Ty-foongs are liable to happen in both monsoons; but they are usually less severe in the China Sea, *if they happen* in May, November, or December; although in the vicinity of Formosa and the Bashee Islands there are sometimes furious gusts in November. From December to May ty-foongs seldom or never happen; of late years, those that have been experienced in June and July were the most violent; many ships have been dismasted and sustained other damage by them. The months of August, September, and October, are also subject to these tempests; the September equinox is a very precarious period, particularly if the change or perigee of the moon coincide with the equinox: when this was the case, ty-foongs happened several years at the equinox in September, on the coast of China, and many ships were dismasted on the 21st or 22nd of that month.

To be able to prognosticate the coming of these tempests would be very useful to navigators, but this cannot be done with certainty, for they frequently commence without giving much indication of their approach. The clouds having a red aspect is not a certain warning of the approach of a ty-foong; for, at the rising, but more particularly at the setting, of the sun, the clouds, especially those opposite to the luminary, in settled weather, are sometimes tinged with a deep red colour by the reflected light. Neither is an irregular swell a good criterion to judge of the approach of a ty-foong; for near the coast of China, a cross swell frequently prevails during steady settled weather. A hazy atmosphere, preventing land from being seen at great distances, is no unfavourable sign on the coast of China; for this is generally its state in *medium* or *settled* weather. A serene sky, with the horizon remarkably clear, should not be considered an indication of a continuance of favourable weather; for a series of fine weather and calms, favouring an increase of heat above the mean temperature, is likely to be succeeded by a ty-foong. When the horizon is very clear in some parts, and the summits of the hills or islands obscured by dense black clouds, there is some irregularity in the atmosphere, and stormy weather may be apprehended; but, in reality, ty-foongs are seldom preceded by any certain sign or indication. Marine barometers, if well constructed, seem to afford the best means of anticipating these tempests; for, on the south coast of China, there is a greater fall of the mercury than might be expected within the tropics.*

Many ships have been driven from the Grand Ladrone to the Mandarin's Cap, and even to the Taya Islands near Hainan, during ty-foongs; for among the islands, and near the coast, these tempests generally commence between N.W. and North, then veer suddenly to N. E. and East, frequently blowing with inconceivable fury, and raising the sea in turbulent pyramids, which impinge violently against each other; the

* Proceeding across the Gulf of Tonking by the Inner Passage to China, July 21st, 1804, in lat. 18° N., the mercury fell in a marine barometer, made by Troughton, from 29.65 to 29.05, previously to, and during a hard gale at N. Westward, out of the gulf, which is a great fall for that latitude.

In lat. 19° N., lon. 115° E., September 28th, 1809, the Neptune's barometer fell from 29.85 to 28.30, prior to and during a ty-foong, in which the True Briton, of 1,200 tons burthen, perished, with all her crew.

In lat. 17° N., lon. 115½° E., September 28th, 1810, the Elphinstone's barometer fell from 29.85 to 29.3, before and during a ty-foong, which laid her on her beam-ends, and they were obliged to cut away the mizen-mast and main-mast to save her. In lat. 16½° N., lon. 116° E., September 9th, 1812, the Elphinstone's barometer fell considerably, by which Captain Craig prepared for a ty-foong, which soon followed, and dismasted H. M. ship Theban, and the Cirencester, but the Elphinstone sustained no injury.

The celebrated circumnavigator, Admiral Krusenstern, informed me, that during the progress of a ty-foong, near the Japan Islands, the mercury in his marine barometer fell below 27 inches, that being the foot of the graduated scale.

Captain Howard, in returning from America by the Bashee Channel into the China Sea, experienced a ty-foong, October 18th and 19th, 1821, in lat. 16½° N., when the mercury fell to 27½ inches.

current, at such times, runs strong to the westward. From eastward, the wind veers to S. Eastward and southward, and then becomes moderate. This rotatory motion of the wind during ty-foongs is generally experienced contiguous to and within a moderate distance of the coast of China; but about 2° or 3° from the coast, a contrary motion often takes place. Here, as before, ty-foongs generally commence from the northward, but instead of veering to N. Eastward and eastward, as in the former case, the wind veers to N. Westward and westward, blowing very severely; it afterwards changes to S. Westward and southward, where it gradually abates in violence.

In some years, no ty-foong happens on the south coast of China; at other times, two or three of these tempests have been experienced in one year; but fortunately their fury is seldom of long continuance.

Gales.

GALES sometimes blow steadily from E. N. E. or N. E. several days at a time, in September or October, near the coast of China. In the same months, gales are liable to happen on the west coast of Luconia. Here, they mostly commence at North or N.W., and veer to West, S. W., or South, blowing strong from all these directions, with heavy falls of rain, and a cross turbulent sea; but they seldom continue long.

Strong N. E. gales have been sometimes experienced on the coast of China during the South-west Monsoon; in one of these, the Ceres, after making the Grand Ladrone July 16th, 1802, was driven, by the 20th, westward to the Mandarin's Cap, with strong gales, hard squalls, and the current setting from 1 to 2 miles per hour to the westward. The N. Easterly wind continued nine days, which obliged her to stand out to sea, and she did not arrive at Macao until the 26th.

In May, June, July, and August, severe gales of wind are at times experienced in the N. Western part of the China Sea, particularly betwixt lat. 14° N. and the island Hainan, with the Gulf of Tonking open. These gales generally begin at N. N. W. or N.W. and blow with violence out of the gulf, accompanied by dark weather, and a deluge of rain: from N.W. they veer to West and S.W., still blowing strong, and abate as they veer more southerly. When these N.W. gales are blowing in the vicinity of the Island Hainan and the coast of Cochin-China, strong S.W. or southerly gales generally prevail at the same time, in the middle of the China Sea.

Currents during the S.W. Monsoon.

THE CURRENTS in the China Sea are very mutable, their direction and velocity depending much upon local circumstances. Late in April, or early in May, they *generally* begin to set to the northward, in the south and middle parts of the China Sea, and continue to set N. Easterly until September, while the South-west Monsoon is strong; but they are not constant in this monsoon, for at times, when the wind is moderate or light, the currents are liable to change and set in various directions. After the strength of the monsoon has abated, there is often little or no current in the open sea, setting to the N. Eastward; but sometimes it sets to the southward.

Along the coast of Cambodia, from Pulo Oby to Cape Padaran, the current sets mostly to the E. N. Eastward, parallel to the shores, from April to the middle of October; and during the same period it sets *generally* to the northward along the east coast of Malay, from the entrance of Singapore Strait to the Gulf of Siam. To the northward of Cape Padaran there is very little current in the S.W. Monsoon, near the coast of Cochin-China; for, from thence to the Gulf of Tonking, a small drain is sometimes found setting to the northward, at other times to the southward. When a gale happens to blow out of the Gulf of Tonking from N. Westward and westward, the current at the same time sets generally to the S.W. or southward, in the vicinity of

the Paracels, or where these gales are experienced; and this current running obliquely, or contrary to the wind, a very turbulent and high sea is thereby produced.

On the south coast of China the current is much governed by the wind: when strong S.W. winds prevail, it runs along shore to the eastward, but seldom strong. Near, and amongst the islands, westward of Macao, there is generally a westerly current, occasioned by the freshes from Canton River, which set in that direction; frequently sweeping along the islands from Macao to St. John between W.S.W. and W.N.W., about 1 or 2 miles per hour. This westerly current is, however, not always constant in the South-west Monsoon, for it slacks at times; then a weak tide may *sometimes* be experienced to set to the eastward.

On the coasts of Luconia and Palawan, the current *generally* sets northward in the South-west Monsoon, but frequently there is no current, and near these coasts it *seldom* runs very strong. Near the Bashee Islands, it sometimes sets to the eastward when strong westerly winds prevail; but generally strong to the northward, or between N.N.W. and N.E.

Currents during the N.E. Monsoon.

The current in the China Sea, during the North-east Monsoon, *generally* runs to the S. Westward before the wind, with a velocity proportionate to its strength; for when strong gales blow in the early part of this monsoon, an augmentation of the S.Westerly current is produced. When the force of the monsoon is abated, or during moderate and light breezes, there is often little or no current.

In the western parts of the China Sea, along the coasts of Cochin-China and Malay, the current in general begins to run to the southward about the middle of October (sometimes sooner on the former coast), and continues until April. During the month of March, the current runs constantly to the southward about Pulo Aor, with light easterly breezes, and calms at times. On the coast of Cochin-China, and adjacent to the Island Hainan, southerly or S.W. currents commence sometimes about the middle of September; and from lat. 15° N. they increase in strength near the land to 11° N. or 11½° N., then decrease farther to the southward. During the prevalence of the North-east monsoon, from about lat. 14° N. to Cape Padaran, the current frequently runs at the rate of 40 or 50, and sometimes 60 miles to the southward in 24 hours, along the coast. This southerly current is not always so strong, and it is confined to the limits mentioned; for it abates at Cape Padaran, and runs with less velocity to the S.W., towards the entrance of the Gulf of Siam.

On the south coast of China, the current during the North-east Monsoon runs almost constantly to the W.S. Westward, parallel to the land; and sometimes with inconceivable rapidity, when a ty-foong or a storm happens. At the distance of 20 or 30 leagues from the coast, the current seldom runs so strong as near it; and out in 30 or 40 fathoms water there is much less current than in shoal water, near the shore and amongst the islands. The westerly current sometimes slacks, and, contiguous to the land, is succeeded by a kind of tides.

Betwixt the Island Formosa and the China coast the current runs to the southward during the North-east Monsoon, and generally to the S.W. or southward, between the south end of Formosa and the north end of Luconia, when strong N.E. winds prevail; but here, in light variable winds, it often sets to the northward. On the west coast of Luconia it is changeable, sometimes setting southward along the coast, at other times northward. On the coast of Palawan the current is also mutable, governed by the prevailing winds, but seldom runs strong in any direction, unless impelled by severe gales. To the eastward of Formosa, about Botel Tobago Xima, the

current frequently runs strong to the northward and N. Eastward, so early as the 1st of March; and, although changeable at times, it sets mostly in that direction during the South-west Monsoon; and in the opposite direction during the North-east Monsoon.

PASSAGE THROUGH THE CHINA SEA, TO OR FROM CANTON RIVER.

Inner Passage to China.

SHIPS BOUND to CHINA, which depart from Singapore or Banca Straits, in February, March, and part of April, may expect a tedious beating passage: in March, April, or May, they may proceed by the INNER PASSAGE, along the coast of Cochin-China, which is *generally* the most expeditious route in these months; but when June approaches, and the South-west Monsoon is set regularly in, the track by the Macclesfield Bank seems preferable, the winds being more steady in the open sea than near the coast.* Even so early as April, about full and change of moon, a ship may sometimes get a westerly breeze blowing out of the Gulf of Siam, to carry her to the Macclesfield Bank, and afterwards easterly winds, to run her to the Grand Ladrone; but if she proceed by the Inner Passage, easterly winds may retard her progress round the south-east coast of Hainan, and thence to the entrance of Canton River. Some ships proceeding by the Outer Passage have carried strong south-westerly and southerly winds, when others inside the shoals have, at the same time, experienced north-westerly and westerly storms blowing out of the Gulf of Tonking, with dark weather and much rain, and have been in danger of being driven among the shoals. This happened to the Portuguese ship St. Antonia, of Macao; she left Pulo Canton on the same day we did in the Anna, July 20th, 1804; and on the following day a gale commenced at N.W. out of the gulf, which increased to a violent storm at West; not being able to carry sail, she was driven to leeward and wrecked† upon one of the shoals in lat. 16° 45′ N. By carrying a press of sail during the first part of the gale, we weathered about 12 or 14 leagues, the north-western limit of the shoals in lat. 17° N.; having experienced in two days, during the gale, a S. S. W. current of 50 miles. This strong southerly current was also experienced in the St. Antonia, for when she struck, she was by reckoning well to the northward of all the dangers.

Outer Passage.

Making the passage in weak ships.

Although the passage to Canton by the Macclesfield Bank, seems preferable to that by the coast of Cochin-China during the strength of the South-west Monsoon, the Inner Passage ought to be chosen if a ship be weak and crazy, or making much water,

* In June, 1803, and in July, 1804, we proceeded by the Inner Passage in the Anna, and two ships went the Outer Passage by the Macclesfield Bank, at each of these times, having left Singapore Strait nearly when we did. On comparing the journals of those ships with ours, it appeared, that on the same days, when nearly in the same parallels of latitude, they experienced a steady South-west Monsoon, while we on the coast of Cochin-China had land breezes in the night, south-easterly and variable sea breezes in the day, with intervening calms.

† The commander and part of the crew of this ship reached the Island Hainan upon a raft, and from thence were conveyed by the Chinese to Canton, where I saw the commander, and got a narrative concerning the loss of his ship.

for the gales which blow out of the Gulf of Tonking are not frequent; and by adopting this passage, she may keep sight of the land, except for a few hours at a time. Departing from Singapore Strait, or from Pulo Aor, she ought to steer along the coast to the Redang Islands, thence across the mouth of Siam Gulf, by Pulo Oby, and along the coasts of Cambodia and Cochin-China, keeping the latter aboard to Cape Turon. From hence, it is not above half a day's run to the south-west part of Hainan, and she should coast along this island to its north-east extremity, Hainan Head, passing between it and the Taya Islands; then cross over for the coast of China about Tien Pak, or more easterly about Hai-Lin-Shan. The islands from hence to Macao may be coasted along at discretion, or shelter may be taken amongst them on emergency. By following this route, a crazy, or leaky ship, will have smooth water; and being near land, may reach a haven, or, if it is found impossible to keep her afloat, be run on shore, by which the crew will be saved. If the boats are kept in readiness, the crew may proceed to the nearest port, or coast along to any convenient place, as circumstances require. If a ship leave Singapore Strait before the middle of March or the 1st of April, the passage will be tedious, unless she sail swiftly and hold a good wind.

THE OUTER PASSAGE to Canton, through the middle of the China Sea, becomes precarious if a ship is not up with Pulo Sapata early in October; for near this island, about the middle of October, strong southerly currents begin to prevail, with light northerly winds, variable airs, and calms; by which many ships have been delayed for several days, and have made no progress to the northward. From this cause some of them have stretched over to the eastward, where they have been entangled among the numerous shoals, and have been in great danger: others, to prevent further delay, have proceeded to China by the eastern passage. These southerly currents about Pulo Sapata are liable to slack for a few days at a time, and this may enable a ship, with the assistance of favourable breezes, which sometimes happen, to reach lat. 13° or 14° N., where the southerly currents are not so strong as off Cape Padaran, about Pulo Sapata, and the Catwicks. Having reached lat. 13° or 14° N., a ship may steer eastward if the wind admit, being then to the northward of the shoals, in order to secure her passage, by getting near the coast of Luconia. If the wind hang at N. E. and E. N. E. after passing lat. 12° or 13° N., rendering it difficult to get to the eastward, long stretches to the northward ought to be made: and if the wind permit, a short tack may be made at times, to keep up the easting; for it would be imprudent to fall in with the coast of China, to the westward of the Grand Ladrone. Outer Passage.

Several ships which did not reach Pulo Sapata until the middle of October, and even so late as the 1st of November, experienced brisk southerly winds, which carried them near the coast of Luconia, whence they got quickly to Macao; but these instances are rare, for southerly currents and light breezes generally prevail about Pulo Sapata during the greater part of October and early in November.

The Royal Charlotte, Triton, and Warley, left Singapore Strait October 25th, 1793, had no southerly current till they reached Pulo Sapata, November 4th; afterwards, they had N. Westerly, but mostly N. Easterly, breezes, and some days a current of 10 miles to the southward. On the 23rd they saw the coast of Luconia in lat. 16° N., and December 1st, in lat. 19° 20′ N., had a gale between North and N.E. which drove them back to lat. 18° 30′ N., and they did not arrive at Macao until the 7th.

The Jehangire, after passing Pulo Sapata in October, 1806, had E. N. Easterly winds and westerly currents, and on the 26th she got on a coral bank with overfalls of 11, 9½,

to 30 fathoms, in lat. 16° 20′ N., lon. 112° 35′ E., by chronometer; this must have been the eastern limit of the Lincoln Shoal, but no danger was visible from the mast-head. It was calm at the time, and the current setting to the S. Eastward soon carried her off the bank: and although this ship was so far to the westward, at this late period, she, nevertheless, reached Macao by the direct route.

The ships General Harriss and General Kyd left Singapore Strait October 3rd, 1821, passed to the eastward of Pulo Sapata, then to the westward of the Paracels, without seeing any of these dangers, or any part of the coast of Cochin-China. They saw the Island Hainan on the 13th, in lat. 18° 40′ N., lon. 110° 58′ E., and the Taya Islands next day, where they had N. E. and E. N. E. winds, with which they kept working near these islands and Hainan Head till the 16th; then stood off to the S. Eastward three days, and in lat. 18° N., lon. 113° E., had a violent gale, or ty-foong, from North and N. E. on the 19th. Anchored under St. John on the 22nd, to repair the damage received in the gale, the General Harris having lost her main-yard; sailed from thence on the 27th, and arrived at Macao on the 30th of October.

This certainly was a singular passage, up the western side of the China Sea, in October; and although effected by these ships, it ought never to be attempted. The ship Broxbournbury left Singapore in January, 1826, beat up through the China Sea, along the Palawan Coast, and arrived in February at Macao, after a five weeks' passage from the former place.

In the Anna, we sailed from Bombay, August 26th, 1802, bound for China; the Lowjee worked out of the harbour with us, and the Ardassier sailed three days afterwards, likewise bound to China. September 14th, we passed Pedra Branca, entered the China Sea, and had light southerly winds till in lat. 12° N.; then, with variable winds mostly at E. N. E. and N. E., we proceeded to the northward by the common route, making a tack to the eastward at times to prevent falling to leeward, but were never to the eastward of lon. 115° E.: made the Lema Islands, September 30th, and moored at Whampoa October 4th. Having delivered our cargo of cotton, and received a full cargo for Bombay, we left Canton River December 2nd, and on this day passed the Ardassier bound inwards: this ship had been embarrassed among the shoals to the eastward of Pulo Sapata, and afterwards came by the Palawan Passage, and along the coast of Luconia. The Lowjee went through the Malacca Strait, and from thence through the Sooloo Sea into the Pacific Ocean, by the eastern passage to China, and she did not arrive in Canton River, where we had remained two months, till about the middle of December, or fourteen days after we left it in the Anna, although both ships left Bombay Harbour together.

The two ships Success and Good Success left Malacca, October 1st, 1814; the former proceeded by the Palawan Passage, the latter beating up through the middle of the China Sea, with N.E. and E.N.E. winds, was never to the eastward of lon. 115° E., but both ships arrived in Macao Road at the same time, November 1st.

Palawan Passage.

THE PALAWAN PASSAGE may be adopted when a ship is late in the season, in order to avoid the southerly currents and light winds often experienced about Pulo Sapata, and in the middle of the China Sea, rendering the passage precarious. It is therefore advisable for a ship leaving Pulo Aor, about or after the middle of October, to steer for the South Anambas, passing to the southward of them, of Low Island, and of the Great Natuna: and from thence N. Eastward, through the channel betwixt the Louisa and Royal Charlotte Shoals. When past these, an E. N. E. course should be steered, to give a berth to the Viper Shoals; and, if the wind be southerly, to get a

sight of Balambangan Island at the distance of 8 or 9 leagues; but, with a steady westerly wind, a ship should pass that island at the distance of 14 or 16 leagues, and make the Island Balabac, which may be passed at any convenient distance, about 8, 9, or 10 leagues, with a fair wind. If easterly winds prevail, borrow nearer to those two islands, for these winds usually force a strong current through the straits to the westward. Steer then N. N. Easterly for the channel, which is 9 or 10 leagues wide, formed by the Half Moon, Royal Captain, and Bombay Shoals in the offing, and by the shoals near Palawan on the inside; and if the deep sea lead be kept going briskly in the night, it will, in *some places*, point out the proximity of the inner shoals, as the bank of soundings generally projects from the coast of Palawan a *little* way beyond these shoals; but from lat. 9° N. to 9° 56′ N., there are 50 fathoms water *close* to several of the dangers. The best track to pass through this channel is to keep about 9 or 10 leagues off the south-west end of Palawan, and the same distance preserved from the land, in proceeding along that coast, will carry you, in the *fair track*, clear outside of the inner shoals and inside of those in the offing.

Great caution is necessary when passing the south-west end of Palawan in thick weather, for it is fronted by numerous dangerous shoals and straggling rocks, stretching to the westward and N. Westward 5 or 6 leagues from the nearest land. October 12th, 1822, at dawn of day, the Regent struck on one of these shoals, in lat. 8° 28′ N.,* Balabac Island bearing S. by W., and Boolanhow Mountain N. E.; she lost her rudder, and was afterwards totally wrecked. October 29th, 1815, the Herefordshire got suddenly into $4\frac{3}{4}$ fathoms, rocks, in the night, and, after grazing over them, anchored in 5 fathoms: at day-light the centre of Balabac bore S. $\frac{1}{2}$ E., the south-west end of Palawan S. E. $\frac{1}{2}$ S., Boolanhow Mountain E. $\frac{1}{2}$ N., distant 10 or 12 miles from the nearest shore. The Countess of Loudon, Captain Hammond, from Bengal bound to China, was lost early in November, 1816, upon a shoal, which he considered to be in lat. 10° 2′ N.: she struck in the night and soon filled with water. Captain Collingwood, of the Susan, who was in company, and who saved the crew of the Countess of Loudon, was of opinion that it was the York Breakers on which she struck.

If the wind incline easterly, after being to the northward of the shoals, pass in sight of the north end of Palawan and the Calamianes Islands, then cross over to make Luban, or Goat Island; and keep the coast of Luconia aboard, if easterly winds prevail, taking care to give a berth to the Sisters and Adders Island, which are not so close to the land as sometimes represented. With the wind at S.W. or West, the coast should not be approached very closely, particularly in passing Cape Bolina, or in crossing the bay to the northward of it; for the current sets from the northward at times into the bay, and the cape is encircled by rocky ground and shoal water.

Ships which stretch off from Cape Bolina may often be able to pass to the eastward of the Pratas Shoal, unless a strong N. E. gale prevail, with a leeward current, which frequently happens; it is therefore advisable, particularly in a ship that sails indifferently, to endeavour to keep in the vicinity of the coast of Luconia until abreast of Cape Bajadore, to make sure of falling in with the coast of China to the eastward of the Lema Islands.

THE PASSAGE to China by the coasts of Palawan and Luconia may be followed without much difficulty in October and November; even in December, also in January, and at every period of the North-east Monsoon, this passage has been made by

* Probably 8° 18′ N., if the bearings of Balabac Island and Boolanhow Mountain are correctly given.

some ships; but the eastern passage is more certain if a ship do not leave Singapore before the 8th or 10th of November, particularly if she do not sail fast when close hauled to the wind.

Abstracts of passages towards China late in the season.

The American brig Pennsylvania passed Achen Head early in November, 1803, went through Malacca Strait, and after getting near Pulo Sapata, with N. E. winds, stood to the eastward, and got embarrassed among the shoals; notwithstanding, this vessel made her passage through the middle of the China Sea in the strength of the North-east Monsoon, arriving at Macao in January, 1804.

The Lord Castlereagh left Bombay September 14th, 1804, remained three days at Malacca, proceeded by the Palawan Passage and along the coast of Luconia, and arrived at Macao November 3rd, having been at sea 46 days, on her passage from Bombay to China. Had the Pennsylvania followed the same route, she probably would have reached China in December, and avoided the dangerous track through which she navigated.

The Lord Walsingham passed the Natunas October 17th, 1787, carried steady S.W. winds along the coasts of Palawan and Luconia, and made the coast of China 10th of the same month, in lat. 22° 44′ N.

The Eugenia passed the Natunas October 12th, 1805, proceeded by the Palawan Passage, and on the 24th made the coast of China, at Pedra Branca. The York and Royal Bishop got sight of Balabec November 1st, 1786, went by the Palawan Passage, and on the 30th arrived at Macao: the Walpole left Pulo Pisang on the west coast of Sumatra October 12th, 1783, and arrived at Macao December 10th, by the Palawan Passage. These ships were not coppered.

Hammaun Shah, Captain P. D. Schmidt, from Bengal, left Singapore Strait November 2nd, 1811, passed in sight of the North Natuna 9th, and between the Louisa and Royal Charlotte Shoals, with S.W. winds, which continued till she passed Balabec Island 19th, at 8 or 9 leagues' distance. On the 21st she saw the Royal Captain Shoal, and the Bombay Shoal on the following day, and from hence she had moderate breezes often at N. Eastward, and a current of 18 miles some days in her favour, in passing along the coast of Luconia at from 8 to 15 leagues' distance. She stood off too soon from this coast, being 20 leagues distant from it when in lat. 16° 48′ N. Dec. 2nd; and in attempting to cross over for the coast of China, a strong N. E. gale with a heavy sea broke all her weather shrouds, which obliged her to wear on the 5th, and take shelter under Luconia to repair the damage sustained. Afterwards, she took a departure from Cape Bolina 7th, passed to the westward of the Pratas Shoal with strong N. E. winds, saw the Lema Islands December 11th, and anchored in Macao Road on that day.

The Herefordshire and General Kyd, in company, left Singapore Strait Oct. 14th, 1815, had mostly light breezes from south-westward and westward till the 29th, when they made the Island Balabec, and the S.W. end of Palawan; from hence, in running through the outer channel between the outer and inner shoals, they had cloudy weather and rain, with strong S.W. and W. S.W. winds, which veered to south and S. S. E. with the same weather, as they approached the coast of Luconia. They kept within 9 or 10 leagues off this coast till November 3rd, then nearly abreast of Cape Bajadore, where the wind became variable, and shifted to N. E., afterwards to South and S. E., as they steered over for the coast of China, which they approached far to the eastward, and were two days with northerly and north-easterly winds, running W. N.W. and West till they made the Lema Islands, and anchored in Canton River, November 6th.

The Duchess of Athol, Captain Daniel, left Hoogly River September 18th, 1822, arrived at Penang 30th, sailed from thence October 8th, arrived at Singapore 16th, sailed again the 19th, passed to the northward of the Natunas 23rd, saw Balabac the 27th, and Palawan on each of the succeeding days, Table Mountain and Ragged Islands the 30th, Goat Island near Luconia the 2nd November, and arrived in Canton River on the 6th of that month.

The Bridgewater, Captain Timins, left Singapore Strait, November 6th, 1819, passed to the southward of the Anambas, Low Island, and the Great Natuna; passed the S.W. end of Palawan 15th, with strong S.W. winds, which carried her to lat. 10½° N. the following day; here she had easterly winds, and afterwards variable, from that direction, with which she passed Cape Bolina 27th, and arrived off the entrance of Canton River 1st December.

The Daphne, Captain Chatfield, left Singapore December 14th, 1822, passed to the southward of the Great Natuna 18th, saw the Royal Charlotte Shoal 24th, and the Pennsylvania Shoal 3rd January, 1823; having experienced much unsettled weather, with a turbulent sea, off Balabac, and in the Palawan Passage, she did not arrive at Manila, the port of her destination, till the 16th January.

The ship Janet Hutton, Captain Howard, from Bengal, left Singapore Strait, November 8th, 1823, passed to the southward of the Anambas, Low Island, and the Great Natuna, saw the S.W. end of Palawan 17th: here, she met with squally unsettled weather, the winds mostly from north-eastward, blowing strong, with intervening calms, and a turbulent sea, which prevented her passing Ragged Island till the 3rd December. She saw Mount Calavite, on Mindora, December 9th, afterwards kept within a moderate distance of the coast of Luconia, until abreast of the Gap of Bigan the 15th, and arrived at the entrance of Canton River 25th December.

The Broxbournbury, Captain Fewson, left Singapore Strait January 11th, 1826, proceeded along the west coasts of Palawan and Luconia, and arrived in Canton River 7th March.

Ships which *sail indifferently* often adopt the eastern route to China, after the middle of November; or otherwise pass into the Sooloo Sea by the Strait of Balabac, and after reaching the Island Mindanao, proceed to the northward along the west coast of that island, Negroes Island, Panay, Mindora, and Luconia, which is *generally* practicable in the North-east Monsoon.* But the most speedy passages have been usually made along the coasts of Palawan and Luconia, in October and November; although short gales from the northward and adverse currents have in some seasons caused considerable delay to ships proceeding by this route. A ship leaving Singapore Strait, which sails well, may however usually be expected to reach China by the Palawan Passage nearly as soon as by the Eastern route in the North-east Monsoon; but more particularly, if she do not leave Singapore later than the 1st to the 4th of November.

* The Glatton, Abergavenny, Lord Thurlow, and Osterly, in company, reached lat. 9° N. near Pulo Sapata, early in October, 1793; here, they got light N. E. winds with southerly currents, gained no ground during seven days, and apprehending they would not be able to make the passage through the China Sea, bore away 14th October. In lat. 6° N., lon. 112° E., they got westerly winds, which carried them through Balabac Strait, and to Mindanao 29th; they proceeded from hence along the west sides of Negroes Island, Panay, and Mindora, with variable breezes mostly between S. E. and S.W., and arrived, November 7th, in Manila Bay. Here they remained until the 7th December, kept along the coast of Luconia to lat. 17° 20′ N., which they reached the 12th; passed on the west side of Pratas Shoal 15th, and arrived the 17th at Macao.

The Alfred and True Briton in company left Singapore Strait October 24th, 1799, had light northerly and variable breezes, and reached lat. 7° 40′ N., lon. 106° 42′ E., November 15th: they were drifted back to lat. 5½° N. on the 22nd, then stood to the eastward with northerly winds, and passed close to the north end of the Louisa Shoal 26th, rounding the south end of Balambangan December 6th, anchored about 1½ miles off Ban-

Passage from China during the North-east Monsoon.

SHIPS BOUND from CHINA to the Straits of Gaspar, Banca, or Singapore, ought in March and April to adopt the Outer Passage by the Macclesfield Bank, which is the most expeditious route in these months, keeping to the Eastward at leaving China, and also in passing Pulo Sapata they ought to borrow towards the shoals, where the winds are more favourable in these months than farther to the westward. In April, the Vansittart, by keeping about 3 degrees more to the eastward than the Herefordshire, made as much progress in one day as the latter did in ten. At all other times, the Inner Passage by the coast of Cochin-China seems preferable. This is the shortest route, and the ease afforded to ships, by steering from the Grand Ladrone immediately before the wind, when blowing strong at N. Eastward, is a great advantage: whereas, by the Outer Passage, a S. S. E. course is steered for the Macclesfield Bank, often bringing the wind and sea before the beam, which strains a deeply laden ship. Many have strained so much, that, in order to gain upon the pumps, they were forced to bear away for the Inner Passage; others, by persevering in the Outer Passage, have laboured excessively, and some of them at last foundered with their crews; some of the ships which, after leaving China, have been missing, have probably suffered from the same cause. Had those ships, at leaving Canton River, steered S. S.W. ½ W., or S. S.W. ¼ W., the direct course for the Inner Passage, they probably would not have strained in the least, but have reached their ports of destination in safety.

Passage from China in the South-west Monsoon.

DURING the SOUTH-WEST MONSOON it was formerly considered impracticable to make a passage down the China Sea: but a fast-sailing ship bound to India will generally succeed by the Inner Passage, during the whole of the South-west Monsoon. If she depart from the Grand Ladrone with an Easterly or S. Easterly wind, which frequently blows for a few days at a time, at all seasons, she will, if bound to Bengal, probably reach her port of destination sooner than by following any of the eastern routes on either side of Luconia.

Of late years, several ships have made their passage down the China Sea in every month of the South-west Monsoon; others, which were indifferent sailers, have not been always so successful. The passage from the Grand Ladrone to Singapore Strait during the South-west Monsoon may be accomplished in from 20 to 30 days, by a fast-sailing ship; particularly if at her departure every effort is made to get to the S. Westward near the Island of Hainan, or rather to get close in with the coast of Cochin-China, as soon as possible.

It may be useful to give a few brief abstracts of passages down the China Sea, during the South-west Monsoon, to shew the irregularity of the winds in this season.

Abstracts of passages from China late in season, and

The Anna, bound to Bombay, left the Grand Ladrone May 25th, 1792, with a S. E. wind, which continued one day; it then veered to South, and kept betwixt that and S. S.W.: with these winds, she did not endeavour to reach the coast of Cochin-China,

guey, with the extremes from N. ½ E. to S. ½ E., the peak N. N. E., and a river's mouth East. With the long-boats filled up their water from this river, sailed 9th, and were until the 17th working with N. E. and Easterly winds through the Strait of Balabac, to the northward of Banguey. They anchored at Sooloo on the 25th, where they procured some bullocks, filled up their water, and sailed again December 29th, and proceeded by the eastern passage to China.

These ships had a very tedious passage from entering the China Sea until they arrived at Sooloo, but they had little or no southerly current after passing the Louisa Shoal; had they adopted the Palawan Passage, and along the coast of Luconia, *it is probable,* they would have arrived much sooner in China, than by the circuitous route of an eastern passage. In some seasons, however, the winds are more favourable for proceeding by the Palawan Passage than in others; therefore, a ship which sails indifferently close to the wind may not always be certain of getting to China by that route, if November is far advanced before she reach the S.W. end of Palawan.

but worked to the southward in the middle of the China Sea, and after reaching lat. 15° N., the wind shifted to the eastward of South, and kept mostly at S. S. E. until she made Point Calavite on Mindora, June 14th. She then proceeded through the Sooloo Sea, Macassar and Sunda Straits. In lat. 15° N., lon. 115½° E., when the wind veered to the eastward of South, and continued in that quarter, she could easily have reached the southern part of the coast of Cochin-China, by standing on the larboard tack; for the current was in general weak, and seldom set to the northward. during the South-west Monsoon.

The same ship, bound to Bombay, left the Grand Ladrone June 13th, 1793, intending to proceed by the Mindora Sea as in the former season, and reached lat. 17½° N. on the 17th: squally weather and strong winds from S. Westward then set in, and continued with a current to the northward several days, which prevented her from making any progress to the southward; she therefore bore away on the 21st for the Bashee Islands, and proceeded by the Eastern Passage. After she bore away, the wind continued at S.W. moderate and light breezes, and the northerly current ceased, for none was experienced in running towards the Bashee Islands.

The True Briton left the Grand Ladrone May 27th, 1802, with easterly winds steered to the southward, and saw Cape Bolina June 7th; the wind then came from southward with a northerly current, which induced her to bear away, in order to proceed through the channel between the north end of Luconia and the Babuyanes Islands; but on opening that channel, the wind veered to East and S. E. with a current setting to the northward, which obliged her to pass out among the Bashees, betwixt Monmouth Island and Grafton Island, into the Pacific Ocean.

The Arniston and fleet left the Grand Ladrone July 6th, 1796, and were ten days reaching the Bashee Islands, with mostly S. Easterly winds.

The Cornwallis, in 1789, proceeded down the middle of the China Sea in May and June, and reached Singapore Strait in about thirty days from Macao, having seen several of the shoals to the eastward of Pulo Sapata, during her passage.

The fleet bound to England left the Grand Ladrone May 10th, 1807, intending to adopt the passage through the Mindora and Sooloo Sea; but the wind being at N. E. when they sailed, and veering to the eastward, they were obliged to steer for Pulo Sapata, and passed that island 22nd, with a N. E. wind. On the 26th, in lat. 7° N., they got the wind light and variable from the southward, made Pulo Capas 31st, then continued to work along the eastern Malay coast, against southerly winds and a current setting generally to the northward, until June 18th, when they got into the strait of Singapore.

The Laurel left Macao June 10th, 1788, bound to Tringany and Bengal; she had the wind first at S. S.W., then variable at S. E., East, and N. E., and on the 17th had soundings on the Macclesfield Bank. With a continuance of variable winds, sometimes southerly, and other times from N. E. and N.W., she proceeded to the southward, and on the 27th, passed close to a low sandy island in lat. 8° 43′ N., having a sand-bank and reef projecting from it. From thence, the winds were mostly light and variable from South to S.W., with which she got sight of the North Natunas July 6th, and anchored, 10th, in Tringany Road.

The same ship, in the preceding year, left Macao June 26th, bound to Batavia; had S.W. and S. S.W. winds the first four days, then variable at N.W., N. E., and S. E., the following four days; afterwards S. E. and Easterly, until she made the S.W. part of Palawan and the adjacent shoals July 8th. She went through Balabac Strait, along the N. E. coast of Borneo, through the Strait of Macassar, and did not anchor at Japara on the Island of Java until August 12th.

The Lord Castlereagh and Charlotte left the Grand Ladrone about the middle of July, 1807, intending to proceed by the Eastern Passage outside Luconia, being bound to Bombay. The winds being from the eastward, they were retarded greatly, encountered a ty-foong near the Bashee Islands, in which the Charlotte lost her sails, and returned to Macao. The wind continuing from the eastward, the Castlereagh bore away for the Inner Passage, betwixt the shoals and Hainan, then proceeded along the coasts of Cochin-China and Cambodia, the wind prevailing from the eastward most of the time. From thence, she soon got to Tringany and Malacca, and after remaining a month at the latter place, had a tedious passage to Penang; and in working out between Achen Head and the Nicobars in October and early in November, she experienced westerly winds. Although this ship got easily down the China Sea in July, it is probable, that if at leaving the Grand Ladrone, the wind had permitted her to proceed into the Pacific Ocean, she would have made a quicker passage to Bombay; for the route from Malacca Strait to the western coasts of India is generally very tedious in the South-west Monsoon.

The Thames, Captain Williams, left the Grand Ladrone August 20th, 1800, bound to England, had variable winds, mostly at S. E., for several days, which prevented her from making much progress in that direction towards the Mindora Passage; the season being far advanced, it was resolved, when in lat. 19° N. on the 25th, to proceed down the China Sea, towards Singapore Strait. She had soundings on the Macclesfield Bank 29th; afterwards the winds were often at S.W. and S. S. W., blowing strong with a heavy sea, and sometimes variable light breezes were experienced, which prevented her from reaching Singapore Strait until October 9th.*

The Asia, bound to Bombay, with the Sarah in company, left the Grand Ladrone August 20th, 1803, made the Taya Islands 23rd, Pulo Canton 29th, passed Cape Padaran September 4th: from hence, with southerly and variable winds, they worked to the southward, saw Pulo Condore 14th, passed outside of Pulo Capas, and inside of Pulo Timoan, Pulo Tingy, and the circumjacent islands, close along the Malay coast, and on the 30th got into Singapore Strait.

The Asia, bound to Bombay, left the Grand Ladrone September 10th, 1798, had a gale at northward on the 12th, which veered to N.W. and West on the following day, then abated: at sunset 15th, the south part of Hainan bore from N. E. to N.W., distant 6 or 7 leagues, in 45 fathoms water; stood S. Westward with a S. S. E. and southerly wind, and in 49 fathoms on the following noon saw the coast of Cochin-China. She proceeded along this coast with moderate and variable breezes, saw Cape St. James, 21st; with westerly winds, she then stood to the southward, passed 15 leagues to the eastward of Pulo Condore, outside of Pulo Timoan and Pulo Aor, and on October 1st entered the Strait of Singapore.

The Anna, and three other ships belonging to Bombay, left the coast of China September 15th, 1803, had variable winds from N.W. to North, round to N. E., East, and S. E., made Pulo Canton 19th, experienced strong southerly currents along the coast of Cochin-China to Cape Padaran, which she passed 22nd. Here, we got strong S.W. gales 23rd and 24th, also 27th and 28th had strong gales, hard squalls, and a high sea, when working betwixt Pulo Condore and the coast of Cambodia, which abated 29th. Worked along the coast, until in sight of Pulo Oby 30th, saw the Redang Islands October 5th, then proceeded to the southward in sight of the Malay

* Captain Williams was the first commander, in the Company's service, who attempted and succeeded in beating down the middle of the China Sea with a large ship against the South-west Monsoon, notwithstanding that his ship, the Thames, had a weakly crew at the time.

coast, with the winds most variable and light between S.E. and S.W., inclining to land and sea breezes, and a drain of northerly current. We passed close on the east side of Pulo Aor 10th, and 12th entered the Strait of Singapore.

The Upton Castle, from Manila, bound to Bombay, endeavoured to pass through the Strait of Manila in July, into the Pacific Ocean; but here she met with strong easterly winds and a lee current, which induced Captain Beyts, the commander of this ship, to steer westward through the China Sea, and the easterly winds continued till he anchored at Nhiatrang, on the coast of Cochin-China, early in August, where, after receiving a supply of water, he worked along the western side of the China Sea to the Strait of Singapore.

Conclusions from the foregoing examples.

From what has been stated, it appears that, in a fast-sailing ship, a passage may be made down the China Sea during any period of the South-west Monsoon; although, in some years, with considerable difficulty. In June, July, and August, an indifferent-sailing ship should not attempt it, except she depart from the coast of China with a favourable wind: and even in a fast-sailing ship, unless some *material advantage* is in view, she ought not to proceed down the China Sea in these months, if bound to the *western parts* of India. A ship bound to Bengal may sometimes make a tolerable passage by sailing early from China; but those bound to Bombay will generally have a tedious passage from Achen Head to that port, in October and part of November; if a ship depart from China in May or June, she will *probably* reach Bombay more speedily by an Eastern Passage than by beating down the China Sea, and proceeding through the Straits of Malacca, or Sunda.

Capt. Blake's Remarks.

Captain Blake, of H. M. S. Larne, adding to his own experience that of several commanders of the "opium clippers," gives the following remarks.

"In beating *against* or running *with* the strength of the monsoon *up* or *down* the China Sea, ships should always pass to leeward of the Paracel Islands and shoals, as well as of the Pratas, or the Scarborough Shoals, should they be near them, on account of the invariable set of the current to leeward. An exception may be made in beating up against the North-east Monsoon after reaching 14° N., as there is an extent of sea-room, and a ship must get well eastward towards the coast of Luconia before she can fetch Macao."

"In running down the China Sea with the North-east Monsoon, the direct line mostly adopted is nearly mid-channel between Hainan and the Paracels, holding rather to the latter, where a southerly current of 30, 40, and 50 miles a day is usual, and between 14° and 11° N., I have known it reach 60° in the twenty-four hours. Thence making the coast of Cochin-China about Varela, and shaping a course southward, so as to pass 30 or 40 miles outside of Pulo Sapata, from whence the course to Singapore is clear, giving the Anambas a berth of about 40 miles, and always, if possible, sighting Pulo Aor, to ensure the reckoning; more especially should the weather be thick, when the lead should be constantly attended to."

"In running up the China Sea *with* the South-west Monsoon, there can be no doubt that the Outer Passage by the Macclesfield Bank is the best, thus passing to leeward of the Paracels with a clear sea. This monsoon generally hangs very southerly during June and July, viz. from S. S. E. to S. S. W., the current always setting in the opposite direction with a velocity proportioned to the strength of the wind."

"On leaving Macao to proceed down the China Sea *against* the South-west Monsoon, it is advisable to make the best of your way southward from the Macclesfield Bank, keeping in from 113° 30′ to 116° 30′ E., and taking every advantage of the least veering of the wind."

Referring to his own passage in May, 1839, from Macao for Singapore, Captain Blake conceives that he lost eight or nine days, for want of experience. "We should not," he says, "have approached the coast of Cochin-China as we did, nor have stood over so far to the eastward as the Investigator Shoal. Had we made shorter tacks hereabouts, keeping the middle passage between the coast of Cochin-China and the eastern shoals, we should undoubtedly have gained several days by it."

Captain Blake doubts the propriety of the recommendation given at p. 292 of this volume, for weak or crazy ships to adopt the Inner Passage during the South-west Monsoon, on account of the gales which, during that season, sometimes blow from the N.W. out of the Gulf of Tonking, and on account of the southerly current, which, in several instances, has set ships on the N.W. part of the Paracels in attempting to weather them. In addition to which, he remarks, that "In running with the South-west Monsoon by this Inner Passage in thick weather, the current, varying as it does in velocity and direction, must render it precarious as to shaping a course with precision or safety."

ISLANDS IN THE SOUTH-WESTERN PART OF THE CHINA SEA AND THE EAST COAST OF THE MALAY PENINSULA.

Islands between Borneo and the Malay coast.

BESIDES the islands contiguous to the west coast of Borneo, there are several groups and detached islands to the northward of the equator, in the space betwixt that coast and the Malay peninsula, which require notice; for ships passing between Singapore Strait and the coast of Borneo, or proceeding through the Carimata Passage, generally pass near, or among some of these islands.

St. Barbe.

ST. BARBE, called PULO PANEEKY BESSAR by the Malays, in lat. 0° 7′ N., lon. 107° 15′ E., or 9 miles E. of Gaspar Island, is a high island, of triangular form, about 3 miles long; when first discerned, it appears like two or three islands, being lower at the centre than at the N. E. and west parts. The N.W. point has two small rocks nearly joining it, and a bay on the east side the point, where water may be procured, and some of the sandy beaches afford turtle at times. A ship may anchor off the S. E. end of the island, in 25 or 26 fathoms, where, also, wood and water may be procured; as the shore is fronted by a reef, boats can only land at high tide, at which time fresh water may be rafted off from the bay at the north part of the island, which is the best anchorage in the southerly monsoon. The tide rises about 6 feet on the springs, and flows to 6 hours on full and change of the moon.

Tides.

Direction Island.

DIRECTION ISLAND, or PULO PANEEKEY KETCHEEL, in lat. 0° 15′ N., lon. 108° 5′ E., or E. $\frac{3}{4}$ N., 16$\frac{1}{2}$ leagues from St. Barbe, is somewhat larger, of conical form in the centre, and may be seen 10 or 12 leagues; low land projects from its

S. W. extremity, near which is a small island. Betwixt it and St. Barbe, the soundings are usually from 20 to 30 fathoms; to the westward of the latter 35 to 25 fathoms, decreasing to 20 and 18 fathoms towards Lingin. In the channel between Direction Island and Pulo Dattoo the soundings are usually 18 and 19 fathoms regular.

WELSTEAD ROCK, discovered in the Company's ship General Harris, Captain G. Welstead, on the homeward-bound passage from China, at ½ past 8 A.M. January 10th, 1825. Steering S. E. with a light breeze at S. S.W., the ship suddenly struck, and grazed over a coral bank, with three or four light shocks, put the helm up and wore to the northward; sounded at the time in 3¼ fathoms, deepened immediately into 6, 12, and 20 fathoms, as before, and when just clear of the shoal, the small islet off the west side of Direction Island was visible from the quarter-deck, above water, the peak on Direction Island bearing S. 28° E., the peak on the highest of the Tambelan Islands N. 38° W., and the southern extreme of the Tambelans N. 48° W.; distance from Direction Island about 6 or 7 leagues, and from Pulo Jarrang, the S. Easternmost of the Tambelan Islands, about 7 or 8 leagues. By calculation from the following noon observation, the rock lies in lat. 0° 32′ N., lon. 107° 55′ E., by mean of three chronometers, corresponding with the longitude of the peak of the Tambelans, and the Natunas, by Captain Ross. This rock, being nearly in mid-channel between Direction Island and the Tambelans, is consequently dangerous; for although the chief officer, Mr. Whiteman, searched an hour in the boat to examine it more particularly, yet he could not find it, as neither breakers nor rollers were seen to point out its situation; it may therefore be probably a *single rock*, or a *narrow ridge* of small extent. The coral rock was clearly visible under the ship's bottom when she grazed over it, and the depth of water at that time, taken exactly, was found to be not quite 22 feet. The Hilsborough had 7 fathoms on a rocky bank about this place many years ago, bnt it was not then known to be dangerous.

Welstead Rock.

Position.

PULO DATTOO, in lat. 0° 7′ N., distant about 10 or 11 leagues eastward from Direction Island, and 4 or 5 miles to the westward of Souroutou, lies within 8 or 9 leagues of the Borneo coast, and being high in the centre, of an oblong form, it is visible from the ships at anchor in Pontiana, and Mampava Roads. To the N. Eastward of Pulo Dattoo, several islands stretch along the coast from lat. 0° 20′ to 0° 50′ N., betwixt Mampava and Sambas, having safe channels and regular soundings among them. From Pulo Dattoo, the depths decrease from 18 or 19 fathoms to 4 and 5 fathoms, within 3 or 4 miles of the Borneo shore.

Pulo Dattoo, and other islands.

THE ST. ESPRIT group of islands extend about 4 leagues W. by N. and E. by S., the body of them being in about lat. 0° 34′ N.; the easternmost island is in lat. 0° 34′ N., lon. 107° 13½′ E., bearing from the north bluff point of St. Barbe N. ½ W., distant 27 miles.

St. Esprit Islands.

Green Island, in lat. 0° 43′ N., is a small square island, with a sandy beach, and covered with trees, lying in a direct line between the Tambelan and easternmost St. Esprit Islands, rather nearer than mid-channel to the latter.

THE TAMBELAN ISLANDS, about 12 leagues N. Eastward of those last mentioned, are a group of considerable extent, in a N.W. and S. E. direction, and

Tambelan Islands.

moderately elevated; the Great Tambelan Island is in lat. 1° 0′ N., lon. 107° 35′ E., by chronometer. There is a good anchorage and shelter from most winds on the west side of Great Tambelan, with a channel nearly a mile wide between its south point and the islets adjacent. There is also a wide channel between the westernmost islands of the group, leading eastward to the Great Tambelan, with 30 to 18 fathoms water, formed between the N. E. and S.W. division of these islands, in an extensive basin or harbour. North from the easternmost island, in lat. 1° 12′ N., lies a *gap rock*, and another small rock to the eastward near it; the depths round these rocks are 24 to 30 fathoms, and the passage betwixt them and the islands is safe, if care be taken to avoid the Europe Shoal. A ship touching at the Tambelan Islands may sometimes procure a few goats, poultry, or other refreshments, although little is to be expected here, the natives being very poor. There is a white rock about 7 miles E. S. E. from Pulo Jarrang, or the S. Easternmost island of the Tambelans, with a safe passage between them.

Supplies.

Europe Shoal.

EUROPE SHOAL, discovered by the Company's ship of this name, when she grounded on it in 1816, is situated near to the Tambelan Islands, extending about half a mile East and West, and a quarter of a mile in breadth, with various depths on it, from 5 fathoms, rocky bottom, to 2 fathoms, the least water. When just clear of the edge of the shoal, extremes of the Tambelans bore from S. by W. ½ W. to S. E., distant about 4 leagues. Stood a little to the N. E. and anchored in 25 fathoms, with Rocky Island bearing W. ¾ S., Gap Rock East, Tambelans from S. by W. ¾ W. to S. E. ¾ E. distant about 5 leagues. By the bearings of the Tambelans, this dangerous shoal *appears* to lie in lat. 1° 12′ N., lon. 107° 24′ E.

Rocky Island, and others.

ROCKY ISLAND, in lat. 1° 9′ N., distant about 3 leagues W. N. W. from the N. W. extremity of the Tambelans, is small, and has an islet close to it. SADDLE ISLAND, about 4 leagues farther to the N.W., is in lat. 1° 16′ N. CAMEL ISLAND, or CAMEL'S HUMP, in about lat. 1° 10′ N.,* is 4 leagues to the S.W. of Saddle Island, and 6 or 6½ leagues nearly West from Rocky Island: the channels betwixt these islands are safe, with depths from 26 to 34 fathoms.

St. Julian.

ST. JULIAN, in about lat. 0° 54′ N., lon. 106° 48′ E., is a small island, which by several navigators has been mistaken for the Camel's Hump.

Acasta Rock.

ACASTA ROCK, discovered by Captain Keen, of the American ship Acasta, at 10½ A.M. May 15th, 1820, with Victory Island bearing about S. by E., 6 miles distant, when she passed about two ships' lengths from this danger, which seemed to be a rock under water, the central part of a very brown colour, declining to a pale green around.

The above-mentioned rock has also been seen in the ship Isabella, of Penang, of which the following account has been communicated by Captain G. F. Gottlieb, then chief officer of that ship. December 18th, 1822, at noon, Victory Island E. S. E. 5 or 6 miles; at 1 P.M. a strong breeze with a heavy sea from N. N.W. standing to N. E., observed heavy breakers on a rock on the lee bow, put the helm down, hove all a-back, and the ship veering round again to the N. Eastward, she passed so close to leeward of the rock, that two of the breakers rebounded from it, and struck against the ship's weather bow. This rock bears from Victory Island N. ¾ W., distant about 5 miles, which will place it in lat. 1° 39′ N., lon. 106° 21′ E. When the sea receded,

* Camel Island is in lat. 1° 12′ N., lon. 106° 52′ E., and Saddle Island in 1° 19′ N., and 107° 2′ E., by some navigators.

the rock appeared to be about 2 or 3 feet under the surface, and seems to have deep water around, as we had no bottom with 30 fathoms, about a cable's length to the eastward of it.

ATWICK ROCK, discovered by Captain MacKoy, of the ship Atwick, on his voyage homeward from Singapore, August 7th, 1831, at $8\frac{1}{2}$ A.M., at which time she grounded upon it, and made the lat. 1° $48\frac{1}{2}'$ S., lon. 107° 34′ E., or 22 miles East of Saddle Island, in Clements Strait, measured to that Island by chronometer, in 48 hours after the accident. Captain MacKoy having assured me of the existence of this newly discovered danger, renders additional caution necessary in ships approaching Clements Strait, or the Carimata Passage, from the northward, during cloudy or hazy weather, when their position is uncertain, from the want of good observations. Atwick Rock.

DOUBTFUL REEF, with breakers, said to have been seen in the grab brig, Bombay Merchant, Captain Hughes, in January, 1825, and was nearly in one with Victory Island bearing N. E., distant from the island about 5 or 6 miles, and soundings of 32 fathoms were got near this supposed reef. Doubtful Reef.

VICTORY ISLAND, sometimes called Woody Island, in lat. 1° 34′ N., about lon. 106° 22′* E., is of moderate height, covered with wood. About 10 miles E. S. Eastward from it, in lat. 1° 32′ N., there is a barren whitish island, called sometimes French White Rock. The depths near Victory Island are 34 and 36 fathoms, decreasing a little to the westward, as the entrance of Singapore Strait is approached. Victory Island.

PULO DOMAR, in lat. 2° 45′ N., lon. 105° 23′ E., or 49 miles East from Pulo Aor, is a high barren rock, with 34 or 36 fathoms water close to it; 35 to 40 fathoms betwixt it and the Anambas; and 32 to 36 fathoms in the proper channel between it and Pulo Aor. Pulo Domar.

THE ANAMBA ISLANDS consist of two large groups and several smaller ones, with numerous detached islets. The channels between the groups appear to be generally safe. Anamba Islands.

THE SOUTH ANAMBAS are but little known, and their true position is doubtful, but they lie North, a little westerly, from Victory Island. Pulo Repon, or Saddle Island, in lat. 2° $24\frac{1}{2}'$ N., lon. 105° 52′ E., is the south-westernmost detached isle of the Anambas group; it is small, and has about 6 leagues westward, in lat. 2° 18′ N., lon. 105° 33′ E., a WHITE ROCK, high above water. Captain La Place, of the French corvette, the Favorite, in April, 1831, passed about mid-way between, carrying depths from 30 to 34 fathoms, muddy bottom. South Anambas.

BAOUA is a small group, nearly 4 leagues to the N. E. of Saddle Island; and 5 leagues E. N. E. of Baoua is another small group, called Rittan, in lat. 2° 39′ N.

THE WESTERN ANAMBAS consist of a high island, called Djimaja, about 4 leagues in length, with several small islands, nearly joining each other, off its N.W. extremity; their north-west limit is in lat. 3° 7′ N., lon. 105° 34′ E., and the south point of the large island is in lat. 2° 50′ N.; it has a peak on it, and a bay on the north side, with islets Western Anambas.

* Baron Wrangel made it 14° 39′ 25″ West from Cavite, in Manila Bay, by chronometer, or in lon. 106° 14′ 50″ E.; he remarks, that Camel Island was visible at 28 miles' distance, with the eye elevated 16 feet; Victory Island at 24 miles, with 24 feet of elevation.

and reefs about a mile distant on the western side, and soundings of 24 to 35 fathoms near them. There is a sunken rock, on which the Courier struck, in lat. 2° 58′ N., about 3 miles from the western shore of Djimaja, and nearly the same distance from Point Joulan, which projects to the westward near the parallel of 3° N.

North Anambas. The NORTH ANAMBAS is the north-easternmost group of these islands, and is comprehended between the parallel of 3° and 3° 30′ N. There are four large islands to the westward, and numerous smaller ones to the south-eastward, with other detached islets. Peaked Island, in lat 3° 5′ N., is 3 leagues to the N. E. of the east end of the Great Western Anambas, having other groups to the south-eastward of it, extending nearly to Pulo Rittan, the largest of which is Pulo Riabou, in lat. 2° 48′ N., about 3 leagues to the N. N.W. of Rittan.

Captain Laplace examined these islands in 1831, and he makes the three largest islands of the North Anambas extend from lat. 3° 9′ to 3° 27½′ N.; the two northernmost, called Pulo Mata and Pulo Mabour, having a channel about a mile wide between them, called Selamata, with depths of 15 to 28 fathoms in the south entrance and middle part; but the northern part has several isles and rocks between the north extremes of the large islands, and appears, by the chart of the survey, not to have been examined. Between the south point of Pulo Mobour, the westernmost island, and Pulo Manguin, fronting it about a mile distant to the westward, the entrance of a deep inlet is formed, called Anse de Paris by the above-named officer; this inlet extends about 3 miles to the northward into Pulo Mobour, nearly dividing the island into two sections; its usual depths are from 23 to 17 fathoms, decreasing near the shore at the upper part, and it appears to form a safe harbour.

Pulo Siantan, the southern large island of the North Anambas, fronts the south end of Pulo Mata, having a channel between them from 1 to 1½ miles wide, in which the depths are from 10 to 24 fathoms: its eastern entrance is obstructed by a chain of shoals, but there is thought to be a narrow passage, with from 5 to 9 fathoms water, to the southward of them, by keeping close along the reef that lines the eastern side of Pulo Siantan. The western entrance of Pulo Siantan Channel is formed by Tupinier Bay, which is 3 miles wide between Tanjong Pedasse, the N.W. point of Pulo Siantan, and the south point of Pulo Manguin, which bear nearly North and South of each other; the centre of the entrance is in lat. 3° 16¼′ N., with depths from 24 to 32 fathoms. About 1½ miles inside of Tanjong Pedasse stands the village Terempa, at the bottom of a small bay, where a vessel might anchor in from 10 to 15 fathoms, sandy bottom, sheltered from all winds; and, 2 miles farther to the eastward, a bay is formed in the north-east part of Pulo Siantan, with depths of 10 to 15 fathoms near the reef that lines the shore, where ships might anchor completely land-locked, according to the chart of these islands by Captain Laplace.

The larger islands are inhabited, and abound with tropical fruits and vegetables, but it is dangerous landing without proper precaution, for the Malays who reside on them may probably massacre or make slaves of strangers, if they perceive a *convenient* opportunity.

Natunas. THE NATUNAS extend from the coast of Borneo a great way to the north-westward: they may be divided into three groups—the North Natunas, the Great or Grand Natuna and its contiguous isles, and the South Natunas near Borneo. This group is subdivided by a safe channel, and the outside channel is spacious, betwixt it and Great Natuna.

Northern Natunas.

THE NORTH NATUNAS consist of Pulo Laut,* a long island, stretching N. E. by N. and S.W. by S. 8 miles, with Pulo Stokong, a smaller island, near its north extremity, and several islets and rocks close to its southern end, upon the reef that lines the shore. There is also a rocky islet, in lat. 4° 39′ N., about 2 miles South from the S. E. point of Pulo Laut. The northern extremity of these islands is in lat. 4° 51′ N., lon. 108° 2′ E., measured from Pedra Branca by chronometer, and corresponding with the observations of Captain Laplace. There are 35 fathoms water about 1½ miles N. N.W. from the northern island, but the whole of the western coast of the long island is lined by a dangerous reef, which extends nearly 5 miles W. by S., and W. S.W. from the S.W. point of that island, having no ground at 40 fathoms within a mile of its extremity; but both to the northward and southward of the extreme western point of the reef there are soundings of 32 to 36 fathoms, mostly coral bottom. The soundings near these islands are irregular in some places, for the Laurel had from 20 to 10 fathoms, and at one time 7 fathoms, coral rock, with the islands bearing from N.W. by W. to W. S.W., distant 5 or 6 miles; when the body of them bore southwest, distant 3 or 4 miles, the soundings were more regular. The North Natunas are of moderate height, producing coco-nuts, and some other fruits, and they are inhabited by Malays.

Saddle Island.

Saddle, or Semione Island, in lat. 4° 31′ N., lon. 107° 44′ E., distant about 6 leagues S.W. of Pulo Laut, has a reef projecting from its south end, and another from the north-west end, with less than 3 fathoms water on it, and 40 fathoms close to. A rock above water lies about 3 or 4 miles to the S. S.W. of this island, with 28 fathoms between them.

The Success Breakers, seen by the Success, November 14th, 1815, are about 2 miles in extent, and are in lat. 4° 23′ N., lon. 107° 55′ E., nearly mid-way between Saddle Island and the north point of the Great Natuna: when the breakers were seen from the deck, bearing E. by S. about 2 miles, Saddle Island bore N.W. ¾ W. about 4 leagues; the eastern extreme of North Natuna N. by E.; western extreme of Great Natuna S. by W. ¼ W., distant 6 or 6½ leagues. She afterwards tacked in 35 fathoms within a mile of the breakers. The Favourite, Captain Laplace, in March, 1831, passing close to the eastern extremities of these dangers, marked as two patches in his chart, carried soundings of 30 to 24 fathoms, sandy bottom.

Great Natuna.

THE GRAND, or GREAT NATUNA, called Pulo Boong-ooran by the Malays, extends from lat. 3° 39′ to 4° 15′ N., and the two small islands off the north point, joined to it by a reef, extend about 3 miles farther, with 17 fathoms within a mile of them. The northern extremity of the island is in lon. 108° 14′ E., the eastern part in 108° 26′ E., by chronometer, and it is about 6½ leagues in breadth East and West. The interior is mostly high; and on the northern part of the island are two mountains of considerable elevation, Goonong Bedong or Quoin Hill, in lat. 4° 3′ N., and Goonong Ranay, near Tanjong Senoubing, the east point, in lat. 4° N.; the latter is 1,890 feet in height, and may be seen 14 or 15 leagues. Some of the projecting parts of the coast are rather low, particularly from lat. 4° N. to the north end of the island, where there are red cliffs. Reefs and islets line the eastern coast, rendering it dangerous to approach under 2 leagues in some places, at which distance the depths are usually from 34 to 46 fathoms. The western coast is also fronted by islands, the chief of which are those of the group lying near the S.W. extreme of the Great Natuna; Pulo Sededap,

* *i. e.* Sea Island.

in lat. 3° 34′ N., is the southernmost island of the group; they are high isles.* Peaked Island, in lat. 3° 54′ N., is also high; likewise North-west, or Selouan Island, in lat. 4° 8′ N., lon. 107° 50′ E., which has a reef projecting a mile or more from its south point, with depths of 30 to 20 fathoms on its S.W. sides: a reef is marked at 2½ or 3 miles' distance from the western side of this island, by Captain Laplace.

North-west Island.

In lat. 4° 1½′ N., and 6 miles S.S.W. from North-west Island, lies a reef of coral rock, with only 2 fathoms on it, and from 20 to 30 fathoms near it on the west and south-west sides: about 5 miles S.W. by S. from the above reef, and 3 leagues W.N.W. from Peaked Island, and about the same distance from North-west Island, another coral shoal lies in lat. 3° 57½′ N., having 3 fathoms, rocks, on it, and from 20 to 30 fathoms, mud, close around; these shoals were explored by Captain Ross, the Company's Marine Surveyor, in 1814; there is also a reef mid-way between North-west Island and the north point of the Great Natuna.

Low Pyramidal Rocks.

LOW PYRAMIDAL ROCKS, about 8½ leagues to the westward of North-west Island, and 12 or 13 leagues distant from the western part of Great Natuna, are in the track of ships returning from China late in the season, when they pass between the Anambas and the Natunas, proceeding towards Gaspar Straits. The Windham and Coldstream, January 17th, 1817, passed on the east side of these rocks at 4 miles' distance; they describe them as a clump, of rugged aspect, elevated about 20 or 25 feet above the sea, and they place them in lat. 4° 6′ N., lon. 107° 24½′ E. The General Kyd, Captain Nairne, March 19th, 1818, passed 4 or 5 miles to the westward of them, and they were estimated to lie in about lat. 4° 9′ N., lon. 107° 27′ E., by chronometer, measured from Macao. When North-west Island bore N. 85° E., the rocks were on a transit line with Peaked Island bearing S. 72° E., distant 4 or 5 miles.

North Haycock Island.

NORTH HAYCOCK ISLAND, in lat. 3° 19′ N., lon. 107° 34′ E., distant 10 or 11 leagues south-westward from South-west Island off Great Natuna, is high, of conical shape, having a reef projecting from it to the south-westward and southward 3 or 4 miles, with 30 and 33 fathoms near its edge.

Diana Shoal.

DIANA SHOAL is a dangerous coral reef to the north-westward of Low Island; Lieutenant Kempthorne grounded upon it in H. M. brig Diana, from whose journal the following account is taken. December 10th, 1808, at half-past 7 A.M. saw the bottom, and sounded in ¼ less 5 fathoms, but lost the lead, by its getting fixed in the coral. Wore to the eastward, and had 5½, 6, 7, 8, 10, 11, 17 fathoms, then no bottom at 20 fathoms. The boat sent to sound had 3½ fathoms, and several casts of 5½ fathoms on the points of coral, with deep water between them: two spots of discoloured water, one bearing South, and the other S.W. by W. about 2 miles, appeared much shoaler than where the boat sounded. The shoal seemed to extend N. E. by E. and S.W. by W., no broken water was visible upon it, but when the swell rolled over the points of coral, it resembled a shoal of fish.

When the bottom was first seen in 4¾ fathoms, the N. E. point of Low Island bore S. E., and the N.W. point, with the S.W. point just open of it, bore S. S. E. ½ E., Haycock Island, N. 43° W., distant from Low Island about 9 or 10 miles. Where

* Captain Laplace, in the Favourite corvette, passed between the south group and the south-west part of Great Natuna, in soundings usually from 24 to 12 fathoms, named Canal Laplace on his chart; but it seems narrow and intricate, interspersed with reefs, both detached, and fronting the isles on either side; consequently, not safe for large ships without great caution.

the boat sounded, she had nearly the same bearings, but was half a mile more to the N.W., with Haycock Island just in sight from her.

The channel between Natunas and Anambas Islands is wide and safe in day-light; but as several coral spots with very little water on them have been discovered in the vicinity of the Natunas, a good look-out is necessary, as other shoal patches may probably exist yet unknown.

LOW ISLAND, in lat. 3° 1′ N., lon. 107° 48′ E., distant about 8 leagues to the S. E. of Haycock Island, is of considerable extent, having shoal water extending to a considerable distance from its eastern and western sides; and the following shoal, lately discovered, in the ship Janet Hutton, requires great caution in ships passing to the southward of Low Island. Low Island.

HUTTON SHOAL is thus described in the journal of Captain Howard. November 9th, 1822, at 10 A.M., observing shoal water to extend a long way off the east and west ends of Low Island, edged out to give it a wide berth in passing on the south side. From 10 A.M. to noon, steered E. by S. 3 miles, and East 2 miles till noon, when discoloured water was seen bearing East, hauled up N. E. by N. to go between it and the island, the extremes of the latter then bearing from N.W. by N. to W. by N., distant about 3 miles, observed lat. 2° 59′ N. Hutton Shoal.

November 10th, P.M. In passing between the shoal and island, the least water was 8 fathoms, rocks, with the east part of the island bearing S.W. by W. ½ W., distant 3 miles, and the nearest patch of shoal water bearing S.E. from the ship. This appears to be an extensive shoal, consisting of patches, and formed in the shape of a horse-shoe. After having passed between it and Low Island, sent the 1st officer in a boat to examine the nearest patch, on which he had 3¾ fathoms pyramidal rocks, and there is probably less water on some of the patches, with channels between them. The southern, or outer patch, appeared to be 4 or 4½ miles distant from Low Island in an E. by N. or E. N. Easterly direction.

JACKSON SHOAL, discovered August 26th, 1830, in the ship Hannah, Captain Jackson, is situated in lat. 2° 56′ N., lon. 107° 55′ E., near Low Island. At 11 A.M., the bottom was perceived in 14 fathoms, coral, and the boat, in sounding near the ship, had from 5 to 7 fathoms, coral; in one place only 4¾ fathoms, with apparently less water on other patches of this coral shoal, which extends about 2 miles in a S. E. and N.W. direction, bearing from the east point of Low Island E. S. E., distant about 6 miles, and it lies 2 miles outside the Bridgewater's track as marked on sheet 1st of Horsburgh's chart of the China Sea. This shoal ought to be avoided, as well as Hutton Shoal to the northward, which may probably be a continuation of the chain of shoals formed of coral patches, now ascertained to exist in the proximity of Low Island. Jackson Shoal.

THE SOUTH NATUNAS consist of detached groups of islands, forming a kind of square about 12 or 14 leagues in diameter; the northernmost of them, called Flat Island, in lat. 3° 3′ N., lon. 108° 54′ E., is of considerable extent from North to South, formed of low land, except the north end, which is of moderate height: to the south-westward and southward of it, other islands and rocks extend 4 or 5 leagues towards High Island group, which greatly contracts the channel between these groups; and a rocky shoal lies 6 or 7 miles to the eastward of Flat Island. WEST ISLAND, in lat. South Natunas.

2° 40′ N., lon. 108° 40′ E., about 9 leagues S.W. ½ S. from Flat Island, is of considerable height, and from the small island in lat. 4° 0′ N., off the east point of Great Natuna, it bears S. ½ E., distant 80 miles: a reef projects half a mile from the north and west sides of the island, and farther from the N. E. part; and at the distance of 2½ miles N. E. by E. from it, there is a high rock, apparently surrounded with shoal water. The depths in the channel between Great Natuna and these islands are from 40 to 52 fathoms. East Island, in lat. 2° 40′ N., lon. 109° 26′ E., is of moderte elevation, and distant about 15 leagues to the eastward of West Island. South Island, called also High Island, or Sapata, in lat. 2° 26′ N., and 7 or 8 leagues S. Westward of East Island, is encompassed with small isles and rocks; straggling rocks are also said to extend from these nearly to South Haycock Island, preventing a safe passage between them and the latter island; but Captain Pearson thinks there is a safe channel on the north side of the Haycock Island, as the passage between it and High Island group seemed open to his view, when proceeding close along the western sides of the islands.

The passage of the South Natunas, formed by Flat Island group and West Island on one side, and by East Island, South Island, and South Haycock Island on the other, is safe, with soundings from 20 to 30 fathoms; the most contracted part between High Island group and that of Flat Island being 4 or 5 leagues wide. The islands on the east side of the channel are steep to, but the Flat Island group must not be approached closely, the ground being rocky to the distance of 3 or 4 miles off, and the shoal to the eastward of the island, on which the Pigot nearly grounded, being dangerous.

If a ship entering this channel from westward pass near the north side of Haycock Island, a course about N. E. by E. will lead through; but if, in entering it, she pass near West Island on the south side, a course about East to E. by S. will be required, until past the small isles on the north side of the channel, which are farther detached from the large Flat Island than formerly marked on the charts, and appear to have straggling rocks 2 or 3 miles distant from some of them. The southernmost of these small isles of Flat Island group bears about E. ½ S. from West Island, distant about 6 leagues, which the Argyle passed within 2 miles on the south side, November 29th, 1834, in 10 fathoms. Captain Macdonald, of this ship, having been becalmed two days in the channel, observed the appearance of many coral patches on the north side, with several long reefs and high breakers between the islands; it is therefore advisable, that the south side of the channel be preserved, if possible, by ships passing through.

Captain Forbes, of the American ship Lintin, October 24th, 1830, at noon, steering N. E. for the passage between the South Natunas and West Island, was surprised to see low land a-head, and had these bearings:—West Island from N. N.W. ¾ W. to N. W. ½ W., distant about 8 miles; a rock off the N. E. part of West Island N. by W. ¾ W.; Haycock S. E. by S. ¼ S.; South Natuna group from E. ¼ S. to E. by S. ¾ S.; an island just visible from the deck E. ¼ N.; nearest low land seen from the deck, flat, and covered with trees, E. N. E. ½ N.; low land seen from the mizen top N. ¾ E. to N. N. E.; lat. 2° 35′ N. by good observation in 24 fathoms water. Perceiving by the bearings that these islands are not correctly laid down in the chart, hauled out to the westward, and with some difficulty, on account of a north-west current, cleared West Island on the western side, and steered for the Palawan Passage.

South Haycock Island.

SOUTH HAYCOCK ISLAND, in lat. 2° 13′ N., lon. 108° 57′ E., is the most

conspicuous of those to the southward of South Natunas; and the two small islands St. Pierre, in lat. 1° 56′ N., lon. 108° 53′ E., about 6 leagues distant from the South Haycock, are in one with each other, bearing E. $\frac{1}{4}$ N.: a little outside these islands the soundings are from 22 to 28 fathoms. About 3 miles S. S. W. from the largest island St. Pierre there is a dangerous ledge of rocks with breakers on it, having 18 fathoms, mud, when it bears North, about 2 miles' distance. There is another island eastward of St. Pierre, near Tanjong Apee, the nearest part of Borneo.

The current at times runs strong among the South Natunas, according to the prevailing winds or monsoons: it has been experienced to run at the rate of $2\frac{1}{2}$ miles per hour to the northward, in the channel between Flat Island and High Island groups, sometimes during the southerly monsoon. Current.

LARKIN SHOAL, on which the ship of this name grounded in the night, April, 1820, was found to consist of rocks and breakers, and is in about lat. 2° 11′ N., between South Natunas and the coast of Borneo: at anchor near the edge of the shoal at day-light, Tanjong Apee bore from South to S. by E., distant about 3 leagues, and South Haycock Island W. $\frac{1}{2}$ N. The soundings were very irregular in the vicinity of the shoal: and breakers appeared to extend from South Natunas towards South Haycock Island. The passage between South Natunas and the coast of Borneo seems not very safe on account of these dangers. Larkin Shoal.

PULO TINGY, in lat. 2° 17′ N., lon. 104′ 11′ E., bearing nearly W. S. W. from Pulo Aor $9\frac{1}{2}$ or 10 leagues, is the southernmost of the islands lying near the east coast of the Malay peninsula; it is conspicuous from a very high peak, which, rising gradually from the low land near the sea, terminates at the summit in a sharp spire or cone. A chain of islets projects from the S. E. part of the principal island, about 3 leagues to the S. S. Eastward, the outermost of them being a round bluff rock in lat. 2° 8′ N., and 4 or 5 leagues distant from the main. There is another small island inside, adjoining Pulo Tingy, which is on with the peak bearing N. N. E. $\frac{1}{2}$ E.; and N. W. by N. from this small island there is a rock, about the size of a boat, off a bluff point on the main, which forms the north extreme of a bay. From the N.W. point of Pulo Baby, which is an island of considerable size, and the nearest to the northward of Pulo Tingy, the rock mentioned bears N. W. by N. $\frac{3}{4}$ N.: this, and the other rocks near the main, are not high above water. Pulo Tingy.

The passage inside Pulo Tingy, betwixt its contiguous islets and the main land, is considered safe in day-light; with tolerably regular soundings of 6 or 7 fathoms near the main, and 12 or 14 fathoms near Pulo Tingy. The course through is about N. W. by N., but it would be dangerous to run in the night, on account of the numerous islets and rocks, some of which are above water. On the north side of Pulo Tingy, in a small bay, there are coco-nut trees, banana trees, and huts; and a watering place at the south end of the island. Inside Channel.

ARETHUSA REEF, on which the brig of this name struck, at 11 P.M. July 15th, 1821, on her passage from Tringany towards Singapore, when working between Pulo Tingy and the main, appears to be a reef under water, extending to the northward and westward of a small islet, which bears W. $\frac{1}{2}$ S. from the peak of Pulo Tingy, nearly in mid-channel between Pulo Tingy and the main, and having 10 fathoms water close to it on the inside. When the vessel struck, the small islet was bearing S. S. E.; and after backing the sails, she came off the reef immediately. Arethusa Reef.

Pulo Aor.

PULO AOR, or WAWOOR, is in lat. 2° 29′ to 2° 30′ N., lon. 104° 34½′ E., or 9° 9½′ W. from Grand Ladrone, by mean of many chronometers; Captain Heywood made it 2° 10′ E. of Malacca, I made it the same, and 9 miles East of Pedra Branca, by mean of chronometers in different voyages: and Captain C. M'Intosh made it also 9 miles East of Pedra Branca by chronometers. This island is generally adopted as a *point of departure*, by ships bound to China, and they also steer for it on their returning passage. It is small, but high and covered with trees; being formed of two hills, with a gap between them, it has the appearance of two islands when viewed at a great distance, bearing N. E. or S. W., and resembles a saddle on a nearer approach; but when it bears to the N.W., the hills are in one. The easternmost hill is of round form, like a dome, rather higher than the other, and in clear weather may be seen 15 or 16 leagues from the deck; at such times Bintang Hill and Pulo Aor are visible together, when mid-way between them. The bay on the S.W. side of the island affords shelter in the N.E. monsoon, when the wind is between North and E. S. E.; and here, persons unacquainted with the entrance of Singapore Strait frequently anchor in dark, hazy, blowing weather, until it becomes more favourable for running into that strait. Close to the S. E. point of Pulo Aor there is an islet covered with trees, and another contiguous to the N.W. point of the bay; to the northward of the latter there is a third islet, larger than those, separated from the north end of the principal island by a narrow but *probably* deep gut.

To sail into the bay

If coming from the northward and intending to anchor in Pulo Aor Bay during N.E. winds, pass on the west side the island, in order to fetch into the bay so far as the watering place, which is a small running stream on the north side the bay. After rounding the west side of the island, which is steep to, at any convenient distance, haul into the bay until the small island is on with the N.W. point, and anchor in 20 to 15 fathoms, sandy bottom, with the extreme bearing from N.W. to S. E. ½ E., off shore about half a mile; but sail ought to be reduced in time, because from 20 fathoms the bank is steep, and it would be imprudent to shoal under 15 fathoms in a large ship.

Tides.

The island is inhabited, and there is a considerable number of huts around the bay; fire-wood and some coco-nuts may be procured, but no other refreshments, except water. Ships water with their own boats, for the natives, although shy of strangers, are generally found to be inoffensive; it is, however, imprudent to let the sailors go up into the country. There is a rise and fall of tide about 5 or 6 feet perpendicular, although the current in the offing sets mostly with the monsoon. The depths near Pulo Aor are from 32 to 35 fathoms to the northward and eastward, 24 and 25 fathoms to the westward, decreasing to 16 or 17 fathoms towards Pulo Tingy, and to 21 fathoms close to the south end of Pulo Pisang.

Pulo Pisang.

PULO PISANG, or PAMBEELAN, in lat. 2° 37′ N., distant about 5 leagues N.W. by W. from Pulo Aor, resembles the latter when seen in hazy weather bearing to the S.W. or southward; for it is formed of two hills with a gap between them, giving it the appearance of a saddle, but it is not so high as Pulo Aor. It is said, that water may be got upon Pulo Pisang; but ships seldom stop here, for it is not inhabited, consequently affords no supplies. The bay on the S.W. side is similar to that of Pulo Aor, with the exception of the islets; the anchorage in the bay is in 18 or 19 fathoms a mile off shore. A very remarkable perpendicular rock will be seen on the side of the hill close to the sea.

Pulo Timoan.

PULO TIMOAN, or TEOMAN, extends about 10 miles North and South, and

is 4 or 5 miles in breadth; the south end of it being in lat. 2° 44′ N., bearing about N.W. ½ W. from Pulo Aor 8 or 8½ leagues, and 10 miles distant from Pulo Pisang. The northern extremity is in lat. 2° 54′ N., and both the north and south parts are in lon. 104° 15′ E. At a short distance from the N.W. end of Timoan there is a group of four small islands, the northernmost of which is of round form, and lies in lat. 2° 56′ N.; the next to this has a flat appearance, and is larger than the others. Pulo Timoan may be discerned 18 or 20 leagues in clear weather, and on its south end, two remarkable peaks, standing on one base, rise almost perpendicularly from the sea to a great height; they are called, from their aspect, Asses' Ears. There is a village on the S. E. side of the island in a small sandy bay, with an anchorage in 20 or 22 fathoms, sand, which may be used during fine weather; but the bay on the S.W. side, in lat. 2° 48½′ N., affords the best shelter in the North-east Monsoon. If you intend to anchor here when coming from the northward, pass close round the N.W. end of Pulo Timoan, betwixt it and the small islands, in which passage the depths are 24 to 20 fathoms, and it is 2 or 3 miles broad. Keeping about 1½ or 2 miles from the western shore of Timoan, the water will shoal gradually in the bay to 10 or 9 fathoms, sand and gravel; the best berth is in 15 or 16 fathoms, with the island bearing from E. S. E. to N. N.W., and the middle of the sandy bay N. N. E. ½ E. There is a small river on the east side of the bay, where boats can fill their casks, but a bar at the entrance prevents their going in and out at low water; at a small rivulet on the N.W. side of the bay, fresh water may be filled at all times. Firewood may be procured in abundance near the shore. Refreshments are not to be had here, the bay seldom being inhabited, although in several parts of the island there are fruits, vegetables, and some cultivation. There is also a stream of fresh water at the south end of the island, which runs over a stony beach into the sea, at the foot of the hill that slopes down from the Asses' Ears to the southward. From this watering place, the peak of Pulo Tingy bears S. 6° W., centre of Pulo Pisang S. 50° E., highest part of Pulo Aor S. 54° E., a small islet in the offing S. 8° W., and the extremes of Pulo Timoan from East to S. 68° W. These bearings were taken by Captain Wm. Richardson, when he watered here in the Althea, in March, 1806. Ships seldom touch at this island, and persons landing on it must be guarded against the deceit of the natives, and ought not to penetrate into the interior.

Inside channel and contiguous isles.

Wood, water, and refreshments.

Along the west side of the island there are tides, the flood setting northward, and the ebb to the southward, 1 or 1½ miles per hour, at times; high water at 6 hours on full and change of moon, and the tides flow perpendicularly 7 or 8 feet.

Tides.

Near the south end of Pulo Timoan there is a small island, and another small *rocky* island to the S.W., about 2 or 2½ leagues from the Asses' Ears, and the same distance from the former island: the channel between these islands is very safe, with regular soundings of 15 to 18 and 20 fathoms within 1½ miles of the S.W. end of Pulo Timoan. After passing between these islands, the depths are mostly 16 to 14 fathoms, soft ground, in steering N. Westward through the channel, bounded on the east side by the group of four islands off the N.W. end of Pulo Timoan; and on the west side by three small islands about 3½ or 4 leagues to the S. Westward of these. This channel, on the west side of Pulo Timoan, is generally from 2½ to 4 leagues wide, and clear of danger, nor does there appear to be any around that island but what is visible above water.

THE SOUNDINGS, in a N. N.W. direction from the north end of Pulo Timoan, are generally 17 and 18 fathoms; N. by W. from it 10 or 11 leagues, 19 and 20 fathoms;

Soundings near the islands.

26 fathoms N. by W. about 4 leagues from it; and nearly close to the northern extremity of the island, 25 and 26 fathoms, which increase to 33 and 34 fathoms when it bears South 15 or 16 leagues. When the north end of the island bears S. S.W. about 2 leagues, the depth is 25 fathoms; when bearing West about 5 leagues, 27 or 28 fathoms; these depths continue about 4 leagues from the east side, and until Pulo Pisang bears W.S.W. about the same distance: as Pulo Aor is approached, they increase to 30 or 32 fathoms.

Sailing Directions.

During the night, or in hazy weather, ships have at various times found themselves close to the north end of Pulo Timoan, when they were well to the eastward of it by the reckoning.

This may always be prevented when coming from the northward in thick weather, by attending to the lead, and not coming under 32 or 33 fathoms when these islands are approached. When in lat. 3° 30′ N., it will be proper to keep out in 33 fathoms; and if you do not borrow under 30 fathoms, you will pass several leagues to the eastward of Pulo Timoan and Pulo Pisang; but to pass outside of Pulo Aor, haul off into 33 or 34 fathoms, for there are 32 and 33 fathoms within 3 or 4 miles of the N. E. and eastern parts of this island.

The small islands to the westward of Pulo Timoan and Pulo Pisang are numerous, some of them being close to the coast, but the greater part 2 and 3 leagues off it.

Inner channel along the coast.

Betwixt these and the Malay coast there is a safe channel for ships of any description, by keeping along the coast at from 3 to 4 or 5 miles' distance, when passing inside of these islands and the others adjoining to Pulo Tingy. The depths in this INNER CHANNEL are 8 to 11 fathoms, in the fair track, usually soft ground; with a few casts of sand in some places, about mid-way between Pulo Tingy and the main. With a working wind you may borrow towards the main, *generally* to 7, and in some places to 6 fathoms, and stand off to 11, 12, and 13 fathoms. The channel is safe in the day, but in the narrow parts, among the islands, it is prudent to anchor at night, because some of the rocks or islets are very little above water: several ships have, nevertheless, proceeded through in the night.* There are tides here at times setting along the coast, but currents predominate when the wind blows strong; these run to the southward in the North-east Monsoon, and in the opposite direction during the southerly monsoon.

In lat. 2° 43′ N., and bearing W. $\frac{1}{4}$ S. from the south end of Pulo Timoan about 9 or 10 leagues, there is an island of considerable size near the main, with some small ones to the N.W. of it, and others close to the shore. Close under the west side of the large island is formed a safe harbour, with anchorage in 4 and $4\frac{1}{2}$ fathoms, stiff mud, sheltered from all winds, called BLAIR HARBOUR; which is easy of access, by passing close inside the small islands, or betwixt them and the north point of the large one; where the depth is 6 and 7 fathoms, decreasing to 5 and $4\frac{1}{2}$ fathoms inside. Captain Pridham, R.N., who touched here September 8th, 1830, gives the following description of a rock in the entrance of the harbour, not previously known. At

Blair Harbour.

* The ships Seaton and Surprise, from China, November 11th, 1796, passed inside Pulo Varela, then steered along the coast in soundings of 10 to 13 fathoms; and in the night passed inside of Pulo Tingy, where they had 9 to 7 fathoms, regular soundings.

The ship Laurel, from Tringany, worked to the southward through this Inner Channel September 18th and 19th, 1788, and was under sail part of the night, when to the northward of Pulo Tingy. The Asia and Sarah, from China, bound to Bombay, passed along the Malay coast, through this Inner Channel, September 26th and 27th, 1803: these ships prudently anchored during the night, when in the narrow part of the channel among the islands.

The Margaret, September 20th, 1802, worked to the southward between Pulo Tingy and the main, standing in to the shore within half a mile in $5\frac{1}{2}$ fathoms, and off to 9 and 10 fathoms.

anchor, well sheltered in Blair Harbour, discovered, on the falling of the tide, a rock above water, about the size of a small boat, near the outer northernmost island that forms the entrance into the bay or harbour, the extremes of which bear N. $\frac{1}{2}$ W. and N. N. E. $\frac{1}{2}$ E. from it. There is deep water around the rock, 5, 6, and 7 fathoms, within a few yards, and a passage between it and the above-mentioned island, which might be used with a leading wind. By digging wells 5 feet deep, about 20 or 30 yards from high-water mark, on the large island, plenty of good water may be procured. There is good anchorage under some of the other islands farther out; Captain Purefoy, in a gale from N. E., ran under one of them, which he called Shelter Island; here he remained at anchor in smooth water until the gale became moderate and the weather clear.

PULO VARELA, in lat. 3° 16′ N., bearing N.W. 10 leagues from the north end of Pulo Timoan, is a barren rock $3\frac{1}{2}$ or 4 leagues from the main, crowned with a few bushes, which may be discerned about 5 leagues off. There is a ledge of rocks even with the water's edge, about $1\frac{1}{2}$ or 2 miles nearly North from it, on which the sea breaks in bad weather; and about 2 leagues to the North and N. N. E. of it there is a rocky bank with overfalls, *probably* not dangerous, for the least water on it is thought to be about 5 fathoms. Pulo Varela, and banks adjacent.

It might have been this bank that we got upon in the Anna, October 9th, 1803, returning from China. We were in 17 fathoms at sunset. Pulo Timoan in sight, bearing S. S. E. $\frac{1}{2}$ E., stood S.W. by S. with the wind S. Easterly, shoaling gradually to 13 fathoms at 9 P.M., and tacked: when about, steering E. $\frac{1}{2}$ N., shoaled to 9 fathoms hard bottom, then two casts of 7 fathoms rocky, next cast 15 fathoms, and for a short time afterwards had overfalls from 11 to 13 fathoms, then deepened gradually in soft soundings. By computation from our observations on the preceding and following days, this bank, where we had 7 fathoms, is in lat. 3° 20′ N., and bears N. 40° W. from the north end of Pulo Timoan about 11 leagues; but as Pulo Varela could not be discerned, and being night, we had not the means of determining the exact situation. The General Elliot anchored upon a bank, about 3 leagues E. $\frac{1}{2}$ N. from Pulo Varela, probably that last mentioned, which, by examining with her boats, was thought to extend North and South about 3 miles, and to be about half a mile in breadth. She had 18 fathoms before getting on the edge of the bank, and the least water found upon it was 6 fathoms coral rock. Betwixt it and Pulo Varela, regular soundings were found, 13 and 14 fathoms sandy bottom, and in some places mud. The bank will be avoided, by keeping out in 20 or 22 fathoms.

The brig Margaret, in working to the northward along the coast, at two P.M. January 31st, 1827, shoaled suddenly from 6 to 4 fathoms, in about lat. 3° 0′ N., and 3 miles off shore. Tacked, had 3 fathoms in stays, and the sea broke about half a cable's length to leeward, the wind being strong from the N. N. Eastward, with a heavy swell. There are two conspicuous little hills on the low land, of regular form, the northernmost of which bore W. by S., and the other S.W. by W., when the vessel was in 3 fathoms, the trees close to the beach being then visible from the deck. Between the above-mentioned shoal bank and the shore, there appeared to be deeper water; but as the bottom is very irregular hereabout, great caution is requisite. Shoal near the coast.

The channel inside Pulo Varela is considered safe; for although the bottom is hard sand in some places, the soundings are generally pretty regular, about 11 or 12 fathoms near the island and the rock to the northward of it, shoaling gradually towards the Inside channel.

main. About 9 leagues N. $\frac{1}{2}$ E. from Pulo Varela there is a narrow bank, with 6 and 7 fathoms water on it, distant 7 leagues from the coast, and extending from lat. 3° 44′ N. about N.W. by N. to lat. 3° 48′ N.

In lat. 3° 51′ N. and 50 miles West of Pulo Aor, Captain W. Owen, October 2nd, 1807, at 3 A.M. steering S. by E. $\frac{1}{2}$ E., shoaled from 13 to 11, 9, 8, and 7$\frac{1}{2}$ fathoms, hauled out E. S. E., and deepened fast to 8, 10, 12, and 16 fathoms: being night when he got these shoal soundings, the position assigned to them is by computation, but they were probably on the bank last mentioned.

Howard Shoal.

HOWARD SHOAL, in lat. 4° 14′ N. or 4° 15′ N., lies in 10 fathoms water, bearing S. by W. about 30 or 31 miles from Brala, or Pulo Capas de Mer, called Tingorem by the Malays; and from the River Camaman, on the east coast of Malay, S. E. $\frac{1}{2}$ E., distant 6 miles, was passed over by Captain Howard, August 31st, 1823, in the ship Janet Hutton, of Singapore; upon this shoal he got 3 fathoms, rocks, and was informed by the Malay fishermen that there is only one fathom on its centre.

East coast of Malay.

THE EAST COAST OF THE MALAY PENINSULA, from Point Romania, its S. E. extreme, to opposite Pulo Varela, is mostly low and woody; its general direction is N. N. Westward, and when clear of Romania Reef, is in most places safe to approach by the lead.

Pahang.

PAHANG, or PAHAN RIVER (the entrance), in lat. 3° 31$\frac{1}{2}$′ N., about 8 or 8$\frac{1}{2}$ leagues N.W. of Pulo Varela, was formerly a place of great trade, and is still frequented by Chinese junks; but it is very shoal, and contracted by the sands, which project from the low points on each side: Pahang Point bounds the river on the south side, and has breakers stretching from it to N. N. Eastward nearly 1$\frac{1}{2}$ miles; a spit of hard sand, with 3 or 4 to 5 and 6 fathoms, extends about a mile farther in the same direction, on the west side of which small ships may anchor in 4$\frac{1}{2}$ or 5 fathoms, clay and sand, off shore 1$\frac{1}{2}$ miles, with Pahang Point South or S. $\frac{1}{4}$ E. about 2$\frac{1}{2}$ miles. Large ships may anchor at a greater distance from the shore.

From Pahang, the coast stretches nearly North to a point in lat. 4° 6′ N., having high land near it, betwixt which and South Cape, about 5 leagues farther to the northward, a bay is formed with some islands close to the shore, and Howard Shoal lies about 6 miles to the S. Eastward of South Cape.

Tingeran.

TINGERAN, or TINGORAM RIVER (the entrance), in lat. 4° 45′ N., is formed close under the south side of Rocky Point, the latter being about 4$\frac{1}{2}$ leagues West from Pulo Brala: this river is barred by rocks, and the coast between it and South Cape forms several bays, separated by Middle Cape and North Cape: all these bays have from 9 to 10 or 11 fathoms water within 2 or 3 miles of the shore; but the projections or capes are rocky. The River Pahang is small, and lies near to one of the capes mentioned above.

Between Pulo Varela and Tingeran, the coast is in general safe to approach to 8 or 10 fathoms; but there are frequently overfalls of 1 or 2 fathoms in the offing, on ridges that lie parallel to the coast; and there are some spots of 7 or 8 fathoms sand and gravel, with 9 fathoms inside of them.

A chain of mountains commences inland, nearly abreast of Pulo Varela, which converges towards the coast near South Cape, and then extends along it towards Tringany.

PULO BRALA, or CAPAS de MER, in lat. 4° 47′ N., lon. 103° 37′ E., by chronometer, distant about 6 or 6½ leagues off the main, is of considerable size, and may be seen 10 or 11 leagues: when it bears S. ¾ W., its summit is flat, but appears in hummocks when bearing S.W. and Westward. There is a black rock, 1 or 2 miles distant from its southern extremity; and the islet Capas Laut, with two or three rocks near it, lie about 4 or 5 leagues Northward from its northern extremity; which render a close approach to Pulo Brala dangerous in the night. Betwixt this island and the coast opposite, about Rocky Point, the soundings are irregular in some places, and the bottom rocky, or sandy; but in other places, regular soundings are found over a bottom of soft mud. The channel is about 4 leagues wide, and safe, by not borrowing under 11 or 10 fathoms towards the main, nor nearer to Pulo Brala than 19 or 20 fathoms. The depths outside this island are 34 and 35 fathoms to the N.E. and Eastward, at 4 and 5 leagues' distance. Pulo Brala.

PULO CAPAS de TERRE, or CAPAS DANAT, in lat. 5° 15′ N., distant about 3½ leagues S. Eastward from Tringany Road, called also Little Capas, lies near the main, 12 or 13 leagues N.W. from Pulo Brala; it is rather low, and there is no safe channel for ships between it and the shore; but a small vessel might venture through in a case of necessity. Pulo Capas de Terre.

TRINGANY RIVER (the entrance), in lat. 5° 21′ N., lon. 103° 4′ E., bears about N. N.W. 12 or 13 leagues from Rocky Point, and is a place of considerable trade, where pepper, and sometimes a little gold, are procured. Here ships have seldom been in danger of surprise, for the Rajah and government of Tringany were formerly more friendly to strangers than those of other Malay ports. Water, provisions, fruits, and vegetables, may be procured. The best anchorage for large ships is in 7 fathoms, with the flagstaff S.W. by W., Redang Islands N. ¼ W. to N. N.W. ½ W., Pulo Capas de Terre S. E. ½ S. 3 or 4 leagues, about 2 or 2½ miles from the mouth of the river. Small ships may anchor farther in shore, in 5 fathoms. The road of Tringany is considered safe from March to September, but it is prudent to leave it before the equinox, although the gales from N. Eastward seldom are experienced until after the 15th October: these gales generally commence at westward, and veer round to N. E. Tringany. Supplies.

THE REDANG ISLANDS are mostly high, and form an extensive chain along the coast from lat. 5° 33′ N. to about lat. 6° 4′ N.; the channel betwixt them and the main is thought to be safe with 12 to 9 fathoms water; but that between the innermost and the outer islands has 16 and 17 fathoms in it, and is better known. The Great Redang, in about lat. 5° 50′ N., is high, of considerable extent, having a harbour fit for small vessels formed at its S.E. part, betwixt it and another contiguous island, in which the depths are from 2½ to 5 fathoms. The soundings in the channel betwixt the Great Redang Island and the main are regular, deepening from the latter to 17 fathoms, sand and shells, with the Redang bearing from N. E. by N. to S. E. by E., distant 2 miles. Pulo Lantinga is 2½ or 3 leagues to the N.W. of Great Redang, and the soundings mid-channel between them are 23 and 24 fathoms; at 1½ miles from the N. E. side of Pulo Lantinga, the depth is 17 fathoms. Pulo Printian, in lat. 6° 4′ N., distant about 6 or 7 leagues to the W. N. Westward of Great Redang, consists of two high islands, separated by a narrow gut at their southern extremities, but opening into a large bay to the northward. This bay is open to N. E. or northerly winds, but well sheltered from the South-west Monsoon; the soundings decrease regularly from 15 fathoms Redang islands and channels.

at the entrance to 5 and 4 fathoms close to the shores on each side, and to 6 fathoms close to a ridge of rocks at the bottom of the bay. Turtle are got in the sandy bay, on the N. E. side; also kimor, or large scollops, which Captain Cheminant, of the Warren Hastings, found to be good food. Off the N. E. part of the northernmost island are four small isles, one of them remarkable by having a round bluff aspect.

Calantan and coast adjacent.

CALANTAN RIVER, formerly under the government of Tringany, but now under that of Siam, is in about lat. 6° 12′ N., and 8 or 9 leagues W. N.W. or N.W. by W. ½ W. from Pulo Printian. Ships sometimes touch here to procure pepper; the bar of the river is shoal, and a number of sand-banks lie inside, on which boats will ground. In the road, at anchor in 5¼ fathoms, mud, the observed lat. was 6° 18′ N.,* with the river bearing South, extremes of the coast from S. E. by E. ½ E. to Panjong Datoo N. W. by W. ¼ W., off shore about 3 miles. The coast from abreast the Redang Islands to this place may be borrowed on to 7 fathoms, soft regular soundings: from Calantan, it stretches westward into the Gulf of Siam, but is very imperfectly known beyond that place; for although formerly there was a considerable trade carried on betwixt Siam and various parts of India, it has for a long period been nearly discontinued, owing to the desolated state of the kingdom of Siam, by frequent wars; lately, however, trade has revived a little betwixt Siam and the British settlement of Singapore.

GULF OF SIAM AND COAST OF CAMBODIA, WITH THE ADJACENT ISLANDS.

To sail from southward to Siam in the South-west Monsoon.

COMING from the southward, bound to Siam in the South-west Monsoon, keep out in 24 or 25 fathoms after leaving Pulo Timoan until you pass Pulo Varela: or pass inside of these islands at discretion, if the weather be favourable. Afterwards, steer along the coast inside Pulo Brala, as the wind hangs sometimes far westerly; and proceed through the channel betwixt the outer and inner Redang Islands, keeping inside the great one, then on the N. E. side of Pulo Lantinga and Pulo Printian.

If you pass outside the Redang Islands, haul in for the main after rounding them, and proceed, at a moderate distance, along the coast which stretches between N.W. and W. N.W. to Cape Patani, in about lat. 7° 4′ N. From Calantan to this place, the coast is low, forming several bays, and there are some contiguous islands; inland, the country is generally hilly or mountainous. In about lat. 7° 19′ N., and 14 leagues from

Patani Cape.

Cape Patani, lies Pulo Lozin, an islet or rock,† which should not be approached in the South-west Monsoon, for it is advisable to keep within a moderate distance of the western

* This latitude was observed by Captain Benners, of an American ship: but on September 3rd, 1802, the Margaret anchored in 4¾ fathoms in Calantan Road, with the river's mouth bearing W. by S., off shore 2 miles, the nearest of the Redang Islands, or Pulo Printian, E. S. E., and observed lat. 6° 11′ N.

† By the Formosa's journal it will be seen that two detached islets or rocks exist in this place. "On the 8th November, 1679, passed near two rocks, that lie E. ½ S. and W. ½ N. of each other, distant about 8 miles, in lat. 7° 17′ N., which are not so far off shore as placed in the charts, nor can they be seen above 4 miles from the deck, and the soundings about them are 26 to 28 fathoms, mud."

coast; the soundings about 2 leagues inside Pulo Lozin are 26 and 27 fathoms, decreasing regularly towards Cape Patani to 8 fathoms. Patani Bay is to the westward of the cape, and must not be approached on the eastern side, being very shoal; the anchorage is on the west side, where the bottom is soft. This was formerly a place of considerable trade.* Patani Bay.

From the west side of Patani Bay, steer along the coast in 12 or 14 fathoms, and preserve the same depths in passing the Large Island of TANTALAM, which appears as part of the coast in coming from the eastward; but Ligor Bay forms a deep concavity on the west side of its northern extremity. Tantalam Island.

PULO CARA, in about lat. 8° 29′ N., and 7 or 7½ leagues to the eastward of the north point of Tantalam Island, is formed of a group of three islands near each other; the northernmost and largest has on the S.W. side a sandy bay, where there *is said* to be a run of fresh water. The southernmost is only a large rock, of white appearance when viewed from that direction; about 2 cables' lengths from its southern extremity there is a flat rock near the water's edge. The channel inside these islands is safe, having from 14 to 18 fathoms water, about mid-way betwixt them and the N. E. end of Tantalam. Pulo Cara.

PULO CARNOM, bearing about N. N. W., distant 32 leagues from Pulo Cara, seems, at first sight, like two islands, the mountain that forms it having a gap, the low land of which is only perceptible at a short distance. The soundings are 18 to 20 fathoms, steering in the fair track between these islands; before reaching Pulo Carnom, the LARCHIN ISLANDS will be seen to the westward contiguous to the coast; they consist of a considerable group of small islands and rocks, and to the S. Eastward of them the high land of Point Carnom. The passage is to the eastward of Pulo Carnom, which may be approached occasionally within 2 or 3 miles in 10 to 12 fathoms water. Pulo Carnom. Larchin Islands.

PULO SANCORI, about 7 leagues N. W. by N. from Pulo Carnom, is nearly of equal height; and Pulo Bardia, about 8 leagues farther in the same direction, is also a high island adjacent to the main. These islands need not be approached, but from Pulo Carnom steer a north course towards Cin Point in about lat. 12° N., bearing nearly N. ½ E. from it about 40 leagues: the high mountains close over this point make it visible at a great distance, and there are two small islands adjoining the extreme point, which has a bay on each side. From abreast the bay on the north side of the point, the coast extends about N. N. E., having good soundings at a moderate distance; there is no danger in coasting along, until the road of Papery is approached, to the southward of which a bank *is said* to project about 4 leagues from the shore, requiring the lead to be kept going. If you do not stop at Papery Road, after passing the bank mentioned, steer N. E. by E. and E. N. E. about 7 leagues, to anchor off Siam Bar, making proper allowance for the tides. Pulo Sancori, and Pulo Bardia. Cin Point, &c.

MENAM, or SIAM RIVER, falls into the sea by several branches; the land that separates them is low, and cannot be seen above 3 leagues off, but it is a little more Menam, or Siam River and Bar.

* The company's ship Globe anchored in Patani Road, in June, 1612, sailed for Siam in August, returned from thence in a passage of eight days, in November, to Patani, where she remained during the N.E. Monsoon: she sailed again in March, 1613, for Siam, returned to Patani in September; and finally departed from the Gulf of Siam for Malacca Strait in October.

elevated at the eastern branch, by which it may be known. This branch has the best navigable channel, although the bar has on it only 8 or 9 feet at low tide, and projects about $1\frac{1}{2}$ leagues out from the entrance; there are 17 or 18 feet on it at high water spring tides, and 19 or 20 feet in September, October, and November, when the river inundates the low country by the rains. The entrance of the river, in lat. 13° 30′ N., about lon. 101° 15′ E., is about a mile wide, and the anchorage is to the southward of the bar about 3 or 4 leagues off, in any depth thought proper; under 3 fathoms the bottom becomes hard towards the fishing stakes.

Yuthia. YUTHIA, or JUTHIA, formerly the principal city, is in lat. 14° 18′ N., about 24 leagues up the river; the Siamese were driven from Yuthia by the Burmans in 1767;
Bankok. the city of BANKOK, the present modern capital, is about 9 leagues up, built upon an island, in lat. 13° 58′ N. by several observations of the stars, and in lon. 100° 34′ E. by an eclipse of the 1st Satellite of Jupiter, corresponding with a good chronometer. The city is built on both banks of the river, but by far the larger part on the left bank. Here the river is free from sand-banks, having seldom less than 7 fathoms water close to each side, so that large vessels may be moored along its banks, with their yards hanging over the shore. Bankok is one of the largest native trading cities in Asia, and from March to June the river is crowded with not less than 100 junks, of all sorts and descriptions; many of them, of large size, trade to various ports of China, and from 50 to 60 to the various ports of the Malayan Archipelago. The country produces
Produce. salt, cotton, sugar, pepper, teak, rose-wood, and many other articles. The deepest water on the bar is to bring the entrance of the river N. $\frac{1}{4}$ W., then steer direct for it; but a vessel intending to proceed into the river ought to procure a pilot. A little way inside, on the eastern bank, there is a fishing village and guard-house, where ships proceeding up the river are required to land their guns, ammunition, &c. From thence the navigation is very safe to Bankok, and the soundings regular from 6 to 9 fathoms, mud.

Ko-si-chang Harbour. KO-SI-CHANG HARBOUR, distant about 26 miles from the mouth of Bankok River, and bearing from it about S. E., is formed by a group of islands in lat. 13° 12′ N., lon. 100° 55′ E.: these islands are seven or eight in number, and are all small, excepting two of them, called by the Siamese, Ko-si-chang and Ko Cram; the former being about 7 miles long and 3 miles broad, moderately high and hilly, and clothed with trees. Ko Cram is about a fourth part of the size of the large island, with a fishing village on it; and a small white building or temple stands on an eminence at the S.W. part of Ko-si-chang, erected by the Cochin-Chinese, who touch regularly here for supplies of wood and water, during their trading voyages to Siam.

The harbour, formed by the two large islands, is sheltered from the wind and sea in every direction, except to the northward, from which direction there cannot be much sea, on account of the proximity of the shoals at the head of the gulf. The best entrance into the harbour is from the northward, but there is also a passage to the southward between the islands; and as the anchorage is over a hard bottom in many places, it will be proper for ships touching here to ride with chain cables. On the S.W. end of the large island there is a fine stream of fresh water, at which a hundred casks may be filled in one day: the stream issues from the hill on which the small temple stands, and escapes to the sea in a little sandy bay, after passing through the bank of sand that
Tides. lines the beach. The rise and fall of tide is about 10 feet on the springs, and it runs

strong through the harbour. The nearest part of the main is the high land of Bampesoi, distant only a few miles from the harbour.

To sail from Siam in the North-east Monsoon.

From Siam, ships bound to the southward generally depart in the North-east Monsoon: if they sail for Malacca Strait before the middle of September a tedious passage may be expected; and in such case the coast ought to be kept aboard the whole of the way to the reef off Point Romania, in order to benefit by any favourable shifts of wind from the land, or to preserve anchorage in moderate depths, when winds and currents are adverse, which will often happen before October. When easterly winds blow strong, the current sets into the Gulf of Siam along the western shore; at all other times, the freshes from the rivers produce an outset to S. E. or Eastward. And this current sets frequently from 20 to 30 miles per day to the eastward, in the strength of the South-west Monsoon, when the entrance of the gulf is open.

Currents.

Cape Liant and eastern side of the gulf.

CAPE LIANT, thought to be in about lat. 12° 34′ N., distant 17 or 18 leagues S. by E. from Siam Bar, is a projecting headland on the east side the gulf, having groups of islands on both sides, considered safe to approach, and the whole of the eastern coast is fortified by an extensive chain of islands. Cancao River, in about lat. 10° 5′ N. to the eastward of Pulo Way, was formerly a Chinese colony, and a place of some trade.

Departing from Siam Bar in the North-east Monsoon, steer a course to pass near Cape Liant and the circumjacent islands, increasing the depth gradually to 15 or 16 fathoms; from abreast the cape steer about S. E. by S. for the islands of Pulo Way, in lat. 9° 55′ N., which are high and safe to approach. Proceeding from Cape Liant, the depths regularly increase over a mud bottom to 35 and 45 fathoms in sight of Pulo Way: if these islands are not seen when in their latitude, and the depth be from 45 to 50 fathoms, haul up E. S. Eastward to get a sight of Pulo Panjang, in about lat. 9° 5′ N.,* to the westward of which, at 5 leagues' distance, the depths are 28 to 30 fathoms. It is advisable to make this island, although Pulo Way, which is high and encompassed with several islets, may have been previously seen. Having brought it to bear about North, steer about S. by E. ½ E. for Pulo Aor, if bound to Malacca or Banca Straits. In case of a westerly current, the lead will be a sufficient guide to prevent getting near the coast, which ought not to be approached in this season to the northward of Pulo Brala; nor will it be advisable to see any land before making Pulo Timoan or Pulo Aor, unless you pass through any of the channels to the westward of these islands.

To sail from Siam in the South-west Monsoon.

If you depart from Siam Bar in the South-west Monsoon, keep along the west side of the gulf, then work to southward in the vicinity of the Malay coast, if bound to the Straits of Banca or Malacca. If bound to China, Cochin-China, or Manilla, steer to pass along the west coast of the gulf as far as Cin Point, then steer S. E. to get a sight of Pulo Panjang, attending to the currents, which generally set eastward in this season; if this island is not discernible when in its latitude, an easterly course may be steered until it is seen.

Having passed Pulo Panjang, steer a S. E. course for Pulo Oby, distant from the

* A plan of these islands, made in the ship Hammody during a voyage to Siam, places this island in about lat. 9° 20′ N.; and it is necessary to observe, that the positions of the islands and coasts of the Gulf of Siam are very imperfectly known.—Captain Milward, of the ship James Anderson, who professes to have taken some pains to ascertain the position of these places, gives the following—Pulo Panjang, lat. 9° 17′ N., lon. 103° 40′ E.; Pulo Way, lat. 9° 58′ N., lon. 102° 52′ E.; Pulo Lozin, lat. 7° 29′ N., lon. 101° 59′ E. (*Naut. Mag.* 1840, p. 743.)

former about 20 leagues, which ought to be rounded on the south side at a moderate distance, on account of the ledge of rocks off it, having 17 fathoms water close to. From Pulo Panjang, in the track steering towards Pulo Oby, the water shoals from 25 to 19 and 18 fathoms near the latter; and on the N.W. side of this island it shoals quickly from 15 to 5 fathoms, soft blue mud, mixed with gravel.

Pulo Oby.

PULO OBY, in lat. 8° 25′ N., lon. 104° 54′ E., by chronometers, distant about 5 leagues nearly S. from the S.W. point of Cambodia, which bounds the entrance of Siam Gulf on the east side, is several miles in extent, and formed of different hills; but the mountain in the centre of the island, being higher than the other hills, may be discerned 15 or 16 leagues There are a few families here banished from the continent, who subsist on vegetables and maize, which they cultivate. A stream of fresh water issues from the top of the mountain, and descending on the north side the island, empties itself into the sea at the landing-place on that side, where a ship may conveniently fill 100 butts of water in a day; but the best anchorage during the South-west Monsoon, is on the east side the island, opposite a small bay, and to the northward of a small island that lies off the S. E. end of Pulo Oby. There is a LEDGE of ROCKS bearing E. S. E. ½ S. from the S.W. extremity of Puly Oby, distant 3 or 4 miles, about 40 fathoms in length, and only the height of a ship's hull above water, with 17 fathoms within half a cable's length; this would be dangerous to approach in the night.

Watering place.

False Pulo Oby, and coast adjacent.

FALSE PULO OBY, about 9 or 10 leagues to the N. N.W. of the former, and 5 or 6 leagues westward from the S.W. point of Cambodia, is a considerable isle, with some small ones around; a reef projects from the S. E. end of the principal island. To the south-eastward of the point of Cambodia, a shoal flat stretches out a great way from the coast; but there is a safe channel, with from 6 to 8 or 9 fathoms, inside Pulo Oby and False Pulo Oby, betwixt them and the flat that fronts the coast. The tides are regular, and set strong East and West betwixt Pulo Oby and the main, except when obstructed by strong winds. In the dry season there are junks employed in carrying water from that island to the adjoining continent, where it is a scarce article at times.

Tides.

To sail from Pulo Oby to Manila.

From Pulo Oby, if bound to Manila, steer to pass on the south side of Pulo Condore, which bears E. ¾ N. from Pulo Oby, distant 109 miles, taking care in the night to give a proper berth to the Brothers, for the westernmost is a *Bare Rock*, not much elevated above water. From Pulo Condore, steer to pass on the south side Pulo Sapata, and from this island N. E. until in lat 12° N.: being then to the northward of the shoals, steer direct for Manila Bay.

Ships crossing from the Redang Islands towards the coast of Cambodia in March, ought to keep well to the eastward if possible; for the current sets to the westward about Pulo Oby into the Gulf of Siam during that month, and the winds prevail at East and E. N. E.

To approach Cambodia River and St James' Bay in the South-west Monsoon.

Ships coming from the southward, in the South-west Monsoon, and bound to Cambodia River, should endeavour to see Pulo Oby, or at least make the coast well to the westward; those bound to Cape St. James' Bay, at the entrance of Sai-Gon River, ought to pass on the west side of Pulo Condore, for the wind sometimes hangs far to the westward. In a direct line from Pulo Brala to Pulo Oby the depths decrease from 35 fathoms, pretty regularly, to 20 fathoms, when the latter is bearing about North or N. N.W. 6 to 8 leagues. If Pulo Condore is approached from the S. Westward, the

depths will decrease to 19 or 18 fathoms, when it bears about N. E. distant 20 leagues; afterwards, 18 and 17 fathoms regular soundings will continue, steering close up to it on this bearing.. Soundings.

After rounding Pulo Oby, if bound for Cambodia River, haul to the northward until near the coast, then proceed along it to the N. Eastward, keeping soundings from 8 to 10 fathoms. All the coast of Cambodia, from the S.W. to the N. E. point, is very low land, inundated by the sea at times; and in most parts the trees are just discerned nearly level with the water's edge, from the deck of a large ship, at the distance of $3\frac{1}{2}$ or 4 leagues. The shoal banks which line the coast project 3 or 4 leagues from it in some places, having $2\frac{1}{4}$ and 3 fathoms sand on them, and 6 to 7 fathoms near their edges. The soundings are very regular in the offing, and decrease gradually until the edges of the shore banks are approached; then from 9 or 8 fathoms, the water shoals suddenly in some places;* the bottom near the edges of the banks, and also a considerable way to seaward, is mostly fine sand and ooze. Coast of Cambodia, with directions to the river.

As the coast is low without any conspicuous marks, it becomes necessary for a vessel bound to Cambodia River to borrow on the edges of the banks, sometimes to 5, or even to 4 fathoms; but in doing so, great caution is requisite in a vessel of considerable burthen. Coasting along in 5 or 6 fathoms, the entrance of a river may be seen, where the trees appear higher than in other parts of the coast; from which Cambodia River bears about E. N. E. 20 or 22 leagues. Steering from hence N. Eastward in the direction of the coast, the mouth of another river will be discerned; and the coast there takes an easterly direction as far as the river Cambodia.

As the coast here is very low and destitute of any particular mark, it must be approached pretty closely to observe its bearing; when it changes from eastward to north-eastward, the entrance of Cambodia River will be abreast.

CAMBODIA RIVER discharges itself into the sea by three principal branches, the westernmost being the proper one for ships; its entrance is in about lat. 9° 34′ N., and 18 leagues N. by W. from Pulo Condore. The sands projecting a considerable way to seaward render the navigation into the river difficult, particularly as they are liable to shift; it is, therefore, prudent to anchor in 4 or 5 fathoms outside, until a pilot can be procured, if you intend to proceed over the bar, the depth on which is said to be 14 to 18 feet, hard sand, at high water spring tides.† Cambodia city or town is nearly 80 leagues up the river, the trade to which has long been discontinued by Europeans; when the country became subject to the government of Cochin-China, the trade of Cambodia was transferred to Sai-Gon. But it has lately been the theatre of the war between the hostile governments of Siam and Cochin-China. Cambodia River, and the adjoining coast.

From the western branch of Cambodia River, the coast stretches N. Eastward to the next branch, which is narrow, and called the Eastern Channel; thence northward to the third branch, called the Japanese Channel, off which lies a small island, called Crab Island. The coast about the mouths of Cambodia River may be approached to 6 or 7 fathoms; the soundings are regular, and a sufficient guide in the night, the bottom being uniformly soft. Betwixt Crab Island and Cape St. James, the coast

* In the Anna, from China, working along this coast in September, 1803, we had $9\frac{1}{2}$ and 9 fathoms regular soundings for upwards of an hour, steering W. N.W., and at noon observed in lat. 8° 58′ N. the entrance of a river, visible from the poop, bearing W. $\frac{3}{4}$ N., the low coast nearly level with the horizon from the deck: had then 9 to 8 fathoms at a cast; the helm was immediately put down, and had $7\frac{1}{2}$ fathoms in stays.

† The Company's ships which traded to Cambodia in the 16th century frequently got aground in the river, and it appears always to have been an intricate navigation for large ships.

continues low, forming a deep bight, with a shoal bank lining it, and projecting a great way out from the low islands which separate the different mouths of Sai-Gon River.

Pulo Condore.

PULO CONDORE (called KIOUN-LUN by the Chinese), the centre of which is in lat. 8° 40′ N., lon. 106° 42′ E., by means of many observations: by chronometers I made it 2° 7½′ E. of Pulo Aor, and Captain Shepherdson made it 7° 2′ W. from the Grand Ladrone by chronometer.* The principal island of the group is about 3 leagues in length N. E. and S.W., from 2 to 4 miles in breadth, encompassed by several islands much smaller, which are mostly all high, and covered with trees. The large island is formed of a ridge of high mountains,† and is inhabited by people from Cambodia and Cochin-China, who continue tributary to that government; they reside in a village on the S. E. side of the island, where the Great Bay‡ is situated. This bay is fronted by several islands to the southward and eastward, with soundings in it from 6 to 14 fathoms, but is rather exposed to easterly winds. There are three passages into it; that betwixt the south point of Condore and the same isles adjacent is very narrow: that betwixt the east end of Condore and the islands opposite has the deepest water; the other, fronting the bay on the S. E. side, is the widest, with 4, 5, 6, and 7 fathoms water; in entering it, the White Button and island on the N. E. side should be approached, for there the deepest water is found. The village is on a plain at the bottom of the bay, and the inhabitants subsist chiefly on yams, pumpkins, fruits, and fish: several years ago, the chief of the village had instructions from the king of Cochin-China to furnish pilots to ships that touched there, and were bound to Cape St. James Bay.

Great Bay.

Pulo Condore Harbour.

The harbour of Pulo Condore is formed betwixt the west end of the principal island and an adjoining high island, sometimes called Little Condore, the S. E. point of which nearly joins the principal one; but they are separated about half a league to the northward, at which part is the entrance of the harbour: here, the depths are 10 and 9 fathoms, mud, decreasing gradually to 5, 4, and 3 fathoms near the flat that occupies the bottom of the harbour, which is dry at low water. This harbour is well sheltered by the surrounding hills, and fresh water may be procured on the east side at a small bay, that on the western shore being brackish; the tide rises 3 or 4 feet, high water at 3 hours on full and change of moon. On the north side the entrance are some islands, with a passage between the outermost and the others: nearly a league E. N. E. from the N. E. end of Pulo Condore there is a barren white rock. These islands abound with timber, but there are no articles of trade to be procured: the soil being generally dry and unfruitful, the country unhealthy, and abounding with reptiles, there is no inducement for strangers to visit this place; consequently, few ships touch here. About 15 leagues S. E., from Pulo Condore, the variation was 1° 40′ easterly in 1805, and it appears to be at present from 1° to 2° easterly all over the China Sea.

Tides.

The Brothers.

THE BROTHERS are two small islands, about 2½ or 3 miles from each other, and are on the same line, bearing N. E. by E. and opposite. The westernmost is a

* Captain Ross, in the Company's surveying ship Discovery, made Pulo Condore, 2° 3′ E. of Pulo Aor, and 7° 4¾′ W. of the Grand Ladrone, by good chronometers.

† The highest part of Pulo Condore is about 1,800 feet above the level of the sea, by geometrical computation, for we saw it from the quarter-deck of the Anna, when 50 miles distant, just visible above the horizon.

‡ The English settled and built a fort here in 1702; and a few years afterwards, were almost all cut off in the night, by Macassar soldiers in their employ.

barren rock, not more conspicuous than Pedra Branca at the entrance of Singapore Strait, and has high breakers on its eastern side, during blowing weather. The eastern-most is a high round islet, with trees on its summit, bearing W. by S. from the centre of Pulo Condore, distant 8 leagues.

Soundings near the Brothers.

THE SOUNDINGS, in a direct line from the Brothers towards Pulo Oby, are mostly 14 and 15 fathoms, very regular; from 13 fathoms close to the Brothers on the inside, shoaling gradually towards the coast of Cambodia; 17 or 18 fathoms about 4 leagues outside the Brothers; 13 and 12 fathoms within 2 miles of them on the east and north-east sides, deepening to 17 fathoms close to Pulo Condore. When Pulo Condore bears N. by E. and North about 10 leagues, the soundings are 19 and 18 fathoms; when N.W. 7 or 8 leagues, 20 to 21 fathoms; West 12 leagues, 24 fathoms; West 20 leagues, 27 fathoms; and there seems to be soundings as far to the eastward as to touch an imaginary line drawn from Pulo Sapata to the Natunas. Rounding Pulo Condore on the south and south-east sides within 2 to 3 miles' distance, we carried regularly 17 fathoms; at the same distance from the east end of it had 18 fathoms. From 18 fathoms, near the White Rock off the N. E. end of Pulo Condore, the soundings continue between 19 and 17 fathoms in a direct line to Cape St. James, until that headland is approached. From Pulo Condore steering direct for the Great Catwick, the depths increase very slowly until within 12 or 15 leagues of the latter, then rather quicker from 30 or 34 to 45 and 50 fathoms near the Catwick.

Although the soundings are usually very regular around Pulo Condore, to a great distance in every direction, yet there appears to be some coral banks to the N. Eastward, in the track towards the coast of Tsiompa, and one to the southward; probably none of them are covered with less than 5 or 6 fathoms water.

Charlotte Bank.

CHARLOTTE BANK is the first of these, situated in lat. 7° 11′ North, lon. 107° 36′ East, or 54 miles East of Pulo Condore, by chronometer, which Captain Askwith, of the Charlotte, grounded upon September 20th, 1807, returning from China to Bombay: she passed within 6 leagues of Pulo Condore on the preceding day, and got upon the bank at 10 A.M.; the least water found on it was $4\frac{3}{4}$ fathoms, coral rock; and 40 fathoms close to.

" Steering South, under close reefs, blowing a strong gale at W. S.W., at 10 A.M. coral rocks were perceived under the ship; the helm was immediately put a-weather, to wear, and had $4\frac{3}{4}$ fathoms with the deep sea lead, when before the wind. In coming to the wind on the other tack, there was so little water apparently under the bow, that I expected the ship would have struck in pitching: when round, had 8 fathoms; and from the foreyard, a small spot appeared to the southward, with less water. From the poop this coral bank appeared to extend about $2\frac{1}{2}$ miles to the southward, and to the eastward $1\frac{1}{2}$ miles; in standing to the N.W., deepened fast to 40 fathoms."

December 15th, 1813, Captain Ross remained 16 hours at anchor on this bank, while the boats were sounding over it; it was found to extend about 3 miles East and West and $1\frac{1}{2}$ miles North and South, broadest at the western part: the least depth found was $6\frac{1}{4}$ fathoms on the N.W. point, where the water is discoloured. The latitude of the bank observed at anchor was 7° 5′ N., lon. 107° 39′ E., or 3° $2\frac{3}{4}$′ East from the east point of Pulo Aor, by chronometers. This bank will be avoided by keeping under 30 fathoms water when passing its parallel. There is a bank of hard ground in lat. 7° 0′ N., lon. 107° 29′ E., by mean of four chronometers, on which Captain F. Pellew,

in H. M. S. Phaeton, had 12 and 14 fathoms, steering N. E. by N. 2 miles; probably the Charlotte Bank.

Laurel Banks.

LAUREL BANKS, two in number, were sounded upon by Captain Cheminant, in the ship Laurel, on his passage to China in April, 1787; he had 9 fathoms coral rocks on the western part of one of these banks, which was the least water; 22 to 24 fathoms near its edge, and he made it in lat. 9° 30′ N. A few days before, they shoaled suddenly from 29 and 28 to 17 fathoms, rocks, on the N.W. edge of another bank, in lat. 9° 27′ N., computed from noon observation, probably part of the former bank. To the N. N. Westward of these banks, in about lat. 10° 4′ N., they shoaled suddenly from 21 and 20 to 13 and 12 fathoms, rocks, upon another bank. As the weather was unfavourable, and the ship beating against a N. E. wind, the *true* positions of these banks could not be ascertained, but they lie S. Eastward from Cape St. James; and it is possible that the southernmost bank was the Royal Bishop Shoal, as the latitude when the ship got upon it *was not* correctly known.

Royal Bishop Bank.

ROYAL BISHOP BANK is rocky and of considerable extent; the soundings near its edges are 32 and 34 fathoms to the S. Eastward and southward; 26 and 24 fathoms to the S. Westward; and 29 or 30 fathoms to the N. Westward: from 10 to 17 fathoms, rocky bottom, are the common depths found upon it, and the least water is thought to be 7 or 8 fathoms. The Gunjavar got on it at noon in lat. 9° 48′ N., and 40½ miles West from Pulo Sapata, by chronometer; the Murad-Bux was on its southern part in lat. 9° 40′ N., and 1° 39′ E. from Pulo Condore, by chronometer; it therefore appears to be about 3 leagues in length North and South, and in lon. 108° 21½′ E., bearing W. S. W. from Pulo Sapata, distant 44 miles.

It was probably upon the western edge of this bank that the ship Udney got suddenly into shoal soundings at midnight, May 8th, 1809, when bound from Bengal to Manila. She was steering N. Eastward with a light easterly breeze, in soundings from 24 to 26 fathoms, and from this depth, the lead being hove only once every hour, had 7 fathoms; tacked immediately, the ship just having steerage way; next cast had 11 fathoms, then 14 fathoms, coral; soon after 27 and 28 fathoms. When she tacked in 7 fathoms, her position, by computation from the preceding and following noon observations, was in lat. 9° 47½′ N., lon. 108° 8′ E., by chronometer.

THE COAST OF TSIOMPA, WITH THE CATWICKS AND OTHER ISLANDS.

Cape St. James.

CAPE ST. JAMES, in lat. 10° 17′ N., lon. 107° 4′ E., or 1° 58′ West* from Pulo Sapata by chronometers, bearing from Pulo Condore N. by E., distant 33 leagues, forms the eastern boundary of the bay and channel leading to Sai-Gon River. It is the first high land seen in coming from S. Westward, the whole of the coast from thence

* Captain Ross made it in this position, by correct observations taken on shore; Captain C. Mackintosh made it a few miles more easterly.

to the Gulf of Siam being very low drowned land: the mountain that forms the cape is intersected by low gaps, and appears like three islands when first seen at the distance of 10 or 11 leagues; but on a near approach, the low land that forms these divisions is perceived.

When bound to Cape St. James Bay, in the South-west Monsoon, pass to the westward of Pulo Condore, having previously made allowance for a current setting out of the Gulf of Siam, whilst crossing the entrance of that gulf. When the body of Pulo Condore is bearing about South, steer North, or N. ½ W. if an easterly current prevail, which will soon bring you on the edge of the bank that fronts the mouths of Cambodia River, and extends to the entrance of Sai-Gon River. Steer then northward along the edge of the bank, keeping in 8 or 9 to 11 or 12 fathoms: if the water shoal under 7 or 8 fathoms, haul to the eastward and it will immediately deepen, the soundings being regular on the edge of the bank. When Cape St. James is approached within 6 or 7 miles, with the wind westerly, steer along the edge of the bank in 7 to 9 fathoms, until the cape bear about N. E., then stand for it, and keep within 1 or 1½ miles of the land, in proceeding to the anchorage in the bay. About 4 or 5 miles South from the pitch of the cape there is a small bank, on which Captain Purefoy had 3 fathoms, hard ground; the preceding track to the westward of it has been recommended with a scant westerly wind, to prevent getting to leeward of the cape. With a S.W. or Southerly wind, pass to the eastward of the small bank, by bringing the cape to bear N. N. W. when 3 or 4 leagues distant, and steer for it on that bearing; when it is approached, keep near the western shore of the cape, which is bold to, and safe to borrow upon, from the pitch of the cape to the low green valley with coco-nut trees, at the eastern part of the bay of Cape St. James; ships may anchor in from 5½ to 7 fathoms, good holding ground, with the village bearing E. S. E. The bottom in the channel is mud, but upon the edge of the bank that bounds the western side it is hard; the water also shoals suddenly on this bank in some places; it ought, therefore, not to be borrowed upon: with the cape E. by N. ½ N., and the village N. E. ½ E., there is a spot of 6 to 4 fathoms, irregular soundings. There is no good water to be got at the village; ships in want of it must send to Gagneray River for it, round the point about 3½ miles to the northward. *To approach it and sail into the bay. Anchorage.*

Pilots may be had at the village, when ships intend to proceed up SAI-GON RIVER, the entrance of which is about 5 miles W. N. Westward from Gagneray Point: it is an excellent river, with depth sufficient for ships of any description. The city of Sai-Gon* is in lat. 10° 50′ N., lon. 106° 43′ E. The King of Cochin-China has here a foundry for casting cannon for his ships, &c.; this being his grand marine depôt, where vessels of war are built, the country abounding with timber and other necessary articles for building. The Portuguese have carried on a constant trade from Macao to this place for many years; and some English ships have endeavoured to trade here, and at other parts of Cochin-China, but without advantage. *Sai-Gon River.*

Cape St. James Bay is called Vung-tau by the natives; the tide rises 8 feet perpendicular, and runs pretty strong on the springs, high water at 11 hours on full and change of moon. Although the cape is steep on the west side, there is a small islet close to it on the S. E. side, and with the cape bearing between N.W. by W. and W. N.W. it should not be approached nearer than 2 or 3 miles, for there are 5 fathoms, hard ground, about 1 or 1¼ miles from it, with these bearings. *Tides.*

CAPE TIWOANE, or THI-WAN, bearing E. N. E. from Cape St. James, distant *Cape Tiwoane and coast adjacent.*

* Called Luknooi by the natives.

about 13 miles, is high, terminating a chain of hills that stretches to the northward; the coast is low close to the sea, and in the middle of a flat sandy shore, betwixt these capes, lies the entrance of Cua-lop River, which running inland, unites with Gagneray Bay, opposite the entrance of Sai-Gon River. Cua-lop River is navigable only by boats, or small vessels drawing 6 feet water. In passing along this part of the coast, do not come under 10 fathoms, for the water shoals suddenly to 6 fathoms, sand, with Cape St. James W. by N. $\frac{1}{4}$ N., Cape Tiwoane N. E. $\frac{1}{2}$ N. to N. E. $\frac{3}{4}$ N., distant 7 miles, and Point Bakeck N. E. by E. You may occasionally anchor on either side of Cape Tiwoane, in 7 fathoms water.

Point Bakeck and the bank fronting it. POINT BAKECK, or BA-KEU, is of middling height, and bears from Cape Tiwoane about N. E. by E. $\frac{1}{4}$ E., distant 19 miles, the coast between them forming a considerable bay, in which there is a small river, called Chitram; from the entrance of this river to Point Bakeck, a dangerous bank projects 4 or 5 miles from the shore, having only 2 or 3 fathoms on its southern edge in some places, and overfalls from 7 to 3 fathoms farther in, towards the shore. **Directions.** To avoid this bank, after passing Cape Tiwoane at 4 or 5 miles' distance, steer about E. N. E. to keep 6 or 7 miles off shore, in soundings of 9 to 11 fathoms, until Point Bakeck bear about North. There are some overfalls in this track, particularly near the edge of the bank, the water shoals suddenly over a hard bottom; but out in 10 or 11 fathoms the bottom is generally soft, and the soundings pretty regular. When Point Bakeck bears N. by W. or N. by W. $\frac{1}{2}$ W. about 6 miles distant, and being in 10 or 11 fathoms, steer N. E. for Cow Island, which **Cow Island.** bears from that point about N. E. $\frac{1}{2}$ E., distant 17 miles: it is a small round island, in lat. 10° 39′ N., with trees upon its summit, and is safe to approach, the depths decreasing regularly towards it. On the east side Point Bakeck there are also good soundings.

Britto Shoal. BRITTO SHOAL, named after a Portuguese captain, who suffered shipwreck upon it, was very imperfectly known, until Captain Ross, the Company's Marine Surveyor, examined it, March 29th and 30th, 1817; he describes it as follows. Discovery, March 29th, at 50 minutes past noon, with Cow Island bearing N. $4\frac{3}{4}$° E., having shoaled at a cast from 12 to 9 fathoms, sand, and judging we were near Britto Shoal, anchored, and sent the boats to sound in a N. E. direction, where they deepened again into 11 and 12 fathoms; but on proceeding more to the eastward, the small cutter had 3 fathoms on a shoal bearing from the ship N. $58\frac{1}{2}$° E., distant about 3 miles. The Investigator had been beating about to the southward of our anchorage, and never had less than 11 fathoms water. At 3 P.M. weighed, and stood to the N. E. until we thought ourselves abreast the west end of the shoal, then anchored in 11 fathoms on a fine sandy bottom, with Cow Island bearing by azimuth compass N. 11° 42′ W.; *true* bearing 9° 43′ W., a rock which appears detached, and forms the extreme of Point Ke-ga bore *true* N. 41° 44′ E., the small cutter in 2 fathoms about 1 mile from the ship bore S. $6\frac{1}{2}$° E., another boat in 2 fathoms about $1\frac{1}{4}$ miles distant bore S. $17\frac{3}{4}$ E. On examining the shoal in the boat, it was found to extend $1\frac{1}{4}$ miles in length E. N. E. and W. S.W., and its breadth does not exceed one-third of a mile. The usual depths on it are 4 or 5 fathoms, and only upon a large patch of rocks about the middle of the shoal is there so little as 2 fathoms; from which shoalest part, Cow Island bears by compass N. 11° 45′ W. **Position.** By careful observations taken on board the ship at anchor, made the lat. 10° 31′ 27″ N., and the chronometers measured 1° 13′ 40″ West from Pulo Sapata to our anchorage, which places the centre of the shoal in lat. 10° 30′ 42″ N.,

lon. 107° 49′ E. Sounding in every direction near the shoal found the depth about half a mile all round it, from 7 to 9 fathoms, increasing to 15 fathoms about 1½ miles to the eastward, and to 17 fathoms about 3½ miles in the same direction. The Investigator was employed beating round the shoal to the southward and eastward, to ascertain that no other patches existed.

To avoid Britto Shoal, on the outside, keep 5 leagues from the coast when abreast the bank, and do not come under 16 or 17 fathoms; but at that distance from the coast, it will be sometimes difficult to see land marks, to know when clear of the bank; therefore, vessels bound from Cape St. James Bay along the coast, or those approaching that bay from the eastward, may proceed through the inside channel; but persons unacquainted ought only to do so with proper precaution in day-light. To pass outside of the shoal.

Having passed Point Bakeck at 6 miles' distance, steer N. E. as before mentioned, to proceed inside Britto Shoal; the best track is to keep in mid-channel, in soundings from 8 to 9 or 10 fathoms, and pass Cow Island at 3 to 5 miles' distance. The depths decrease towards Cow Island and the main to 7 and 6 fathoms; and from 9 fathoms in mid-channel, they increase to 11 or 12, and usually decrease again to 9 or 10 fathoms close to the edge of Britto Shoal. To pass through the Inner Channel.

POINT KE-GA, in lat. 10° 42′ N., lon. 108° 4′ E., bearing from Cow Island E. by N. about 11 or 12 miles, projects a long way out, by which a great bay is formed on each side: this point resembles an island when viewed at a distance, being joined to the main by a low narrow causeway, formed of a rocky mass, which has the singular appearance of a city in ruins. The point is safe to approach, but it must be kept to the northward of East, in coming from Cow Island towards it, on account of a bank projecting from a village on this side. In the bay betwixt Point Bakeck and Point Ke-ga, the land is low and woody in some parts near the sea, with several small rivers: inland, the country is high, and the regular sloping mountain called Taicou, in lat. 10° 45′ N., stands directly over Point Ke-ga, bearing from it N.W. ½ N., and the point is formed by the foot of this beautiful mountain, which is visible a great way from seaward, being the most conspicuous land in this part of the coast, and detached from any other high land. Point Ke-ga, the adjacent coast. Mount Taicou.

POINT VINAY, bearing from Point Ke-ga, N. E. ½ E., 19 miles distant, is encompassed by a small bank on the west side, inside of which there is good anchorage in 5 fathoms, opposite a fishing village in the small bay formed on the west side of the point. The Bay of Phuiay is formed by the land trending northward from Point Ke-ga to Phuiay River, and from thence eastward to Point Vinay; abreast this river, at a considerable distance from the shore, there is anchorage in 5 or 6 fathoms, and the entrance of the river may be known by an islet formed of a mass of rocks, at a considerable distance from it. Tiger Island is separated from the shore on the east side of Point Vinay only by a passage for small boats, being situated close to the point; although covered with birds' dung, it is not conspicuous, and only perceived when a ship is near the land. The coast hereabout is speckled with alternate patches of sand and verdure. Point Vinay. Tiger Island.

MUI-GUIO, or LITTLE CAPE, bearing N. E. ¾ E. from Point Vinay, distant about 16 miles, forms the south point of the Bay of Phanry, and is known by a high, steep *sand hill* close to the sea; between these points, the coast is moderately elevated and steep to seaward, having 10 and 11 fathoms water near it. From Mui-Guio, Mui-Guio.

the coast stretches nearly North to the entrance of Phanry River, and is of a reddish colour: a vessel may anchor in 6 fathoms about a league off shore, but the bar of the river is only navigable by boats on the flood tide. Phanry is a large fishing village, whose numerous boats* are seen fishing in the offing, sometimes at a considerable distance from the shore.

Point Legan.

POINT LEGAN, situated in lat. 11° 9′ N., and bearing E. 16° N. from Mui-Guio, distant about 5 leagues, is a narrow and low neck of land, projecting a considerable way into the sea; on the west side there is a small bay with a fishing village, where is good anchorage for small vessels. There is also a small village to the northward of Point Lagan, where vessels may anchor in 5 or 6 fathoms.

Pulo Ceicer de Terre, and adjacent coast.

PULO CEICER DE TERRE, called HON-CAU by the natives, distant about 8 or 9 miles E. 30° N. from Point Lagan, is in lat. 11° 13′ N., lon. 108° 48′ E., or 4° 56′ West from the Grand Ladrone, and 4° 13½′ East from Pulo Aor by chronometers; this is a low island, extending nearly E. N. E. and W. S. W., having near its centre a mass of rocks higher than the other parts, which is discernible about 5 leagues from the deck of a large ship. When first seen, it appears like a small peak or spire, and sometimes like a boat's sail; the whole of the island is rocky and barren, but a little grass or green moss may be perceived on the flat part. The two low extremities of the island are encompassed with rocks, which project out above and below water to a considerable distance; there are also some rocks above water on the south side; but as the danger is generally visible, the island may be approached in the day within 2½ or 3 miles. In the night, it ought not to be approached so close, for then the island cannot be perceived unless it be very near.

The coast behind this island forms a deep and extensive bay, stretching from Point Legan to the land of Cape Padaran; and the high land of CEICER to the N. Westward and Northward of the island, is very mountainous close to the sea. Betwixt Pulo Ceicer de Terre and the N. E. side of the bay, opposite the Gap of Padaran, lies the Breda Bank, having 4 fathoms, coral rocks, on its eastern edge, and there is said to be much less water to the westward; it is not in the way of ships passing outside Pulo Ceicer de Terre, unless with a working wind they stand far into the bay betwixt that island and the land of Padaran. Inside the island there is a channel, with soundings of 5, 6, and 7 fathoms, between it and the bank mentioned above, which is sometimes frequented by the native coasting vessels.

Breda Bank.

Cape Padaran.

CAPE PADARAN, called MUI-DIN by the natives, in lat. 11° 21′ N., lon. 109° 0′ E., or 4° 44′ West from the Grand Ladrone by chronometers, bears about N. E. ¾ E. from Pulo Ceicer de Terre, distant 5 leagues. It is high land, steep and convex to seaward, forming the projecting part of the continent to the S. E. The high land of Padaran is joined to the adjacent mountain of Ceicer by a neck of low level land, visible only when near the shore on the south side the cape, but seldom seen at the distance which ships usually pass: this gives the land of Cape Padaran an isolated appearance when approached from S. Westward, and it has a similar aspect in coming from the northward. The neck of low land forms a very deep gap between the land of Padaran and the mountain to the westward, and this gap or chasm in the land is generally called the GAP of Padaran, and by the natives CANA. It is very conspicu-

Gap in the land.

* These boats, and others of Cochin-China, sail fast, and have great stability, being safe in a high sea; their sails are of a triangular form, constructed of light mats.

ous at a great distance, and serves as a mark to avoid Holland Bank, and to point out the direction of Pulo Ceicer de Terre, this island being on with the Gap, bearing from N. by E. $\frac{1}{4}$ E. to N. by E. $\frac{1}{2}$ E.

SOUNDINGS do not extend far out from Cape Padaran, it being a steep headland, bold to approach, having from 25 to 30 fathoms very near the shore: when it bore W. by N. $\frac{1}{4}$ N., distant 2 miles, and Pulo Ceicer de Terre W. by S. $\frac{3}{4}$ S., we had no ground at 40 fathoms; with the cape N. by E. $\frac{3}{4}$ E., and Pulo Ceicer de Terre W. $\frac{1}{4}$ S., we had ground 25 fathoms, about 2 miles off the bluff land of Padaran. About half-way betwixt the Cape and Pulo Ceicer de Terre, the depths begin to decrease to 20, 17, and 14 fathoms irregular soundings, when within 4 or 5 miles of the island. The soundings about Pulo Ceicer de Terre, being in general irregular, are not always a sufficient guide in the night, to shew the proximity of the island: for although near it, the water shoals to 9, 8, or 7 fathoms, there are also overfalls from 17 to 10 and 8 fathoms in some places, at the distance of 2, 3, or 4 leagues to the southward of the island. When it bears North about 4 leagues, there are overfalls from 18 to 12 fathoms, and the depths are very irregular with it bearing between North and N. by E.: the Althea got on a bank of 8, 7, and $6\frac{1}{2}$ fathoms, with Ceicer de Terre bearing N. by E. $\frac{1}{2}$ E. just in sight from the deck, and Point Lagan N. by W. $\frac{1}{4}$ W. A little farther to the westward the soundings become more regular, decreasing in depth gradually towards the coast, and increasing to 23 or 24 fathoms near Holland Bank. The channel bounded by this bank in the offing, and by the coast of Pulo Ceicer de Terre on the inside, is 7 leagues wide; ships working through it in the night ought not to stand farther out than 22 or 20 fathoms, for the depths close to the edge of Holland Bank are from 23 or 24 to 25 or 26 fathoms in some places. Soundings.

HOLLAND BANK was examined by Captain Ross, the Company's Marine Surveyor, in April, 1817, and is thus described in his journal:—Discovery, April 1st, after having crossed over Holland Bank twice, anchored on its southern extremity in 8 fathoms, and observed the lat. 10° 37′ 15″ N., the chronometers placing us at the same time 51 miles East of Britto Shoal, and $22\frac{3}{4}$ miles West from Pulo Sapata, or in lon. 108° 40′ E., from whence the S. Western Hillock on Pulo Ceicer de Mer bore S. $77\frac{3}{4}$° E., distant $15\frac{1}{3}$ miles; and the Peaked Rock bore N. $87\frac{1}{4}$° E., distant* 12 miles. After weighing, steered over the bank N. E. by N., and by the log, found its length to be $3\frac{1}{4}$ miles in that direction. When the S. Western Hill of Pulo Ceicer de Mer bore from S. 64° to S. 66° W., we passed over the shoalest ridge in 4 fathoms, but in the morning had $3\frac{3}{4}$ and $3\frac{1}{2}$ fathoms on the same part: when the S. Western Hill bore S. 58° E., we began to deepen off the shoal to the northward in 16 fathoms. Holland Bank.

If Pulo Ceicer de Mer is not brought to the eastward of S. E., it appears that a ship, in steering towards it with these bearings, would clear the northern extremity of Holland Bank. The western part is very dangerous for large ships, when the centre of Pulo Ceicer de Mer bears between E. by S. and E. S. E. about 5 or 6 leagues distant, and the *low part* of the island that *unites* the two hills is *just visible* from the deck of a large ship, the elevation of the eye being about 22 feet. The soundings close to this part of the bank are 23 and 24 fathoms; and by standing on the edge of it, when under 20 fathoms, they decrease, in a few cables' lengths, to 10, 6, and $3\frac{1}{2}$ fathoms, rocks, in several places. If, however, the lead be attended to, and hove quickly, it Dangerous part of the bank.

* The distances were obtained from a base line measured by sound between the two vessels 4 miles apart, the Investigator at anchor in 24 fathoms water, bearing from the Discovery N. 16° 40′ W.

will point out the edge of the bank, before a ship gets into danger; and this seems to hold good, in the approach to the bank on both sides.

The fleet from China, in January, 1805, by steering too far southerly from Cape Padaran, got on the western part of Holland Bank, and the Canton, Glatton, and H. M. S. Grampus, struck, although at a considerable distance from each other; the latter ship drawing 20 feet, struck hard several times, had 22 feet water by the lead, and was lifted over the rocky pyramids by the swell. These ships struck in lat. 10° 38′ to 10° 41′ N., the Gap of Pandaran bearing N. 16° E., the sand hill on Mui-Guio about N. N.W., Mount Taicou about W. by N. ½ N.,* and the centre of Pulo Ceicer de Mer E. by S. ¼ S. from the southernmost ship, and E. S. E. from the northernmost, estimated distance 5½, 6, or 6½ leagues, the low part of that island which joins the two hills plain in sight from the quarter-deck.

Directions to avoid Holland Bank.

To avoid the western part of Holland Bank in clear weather, do not raise Pulo Ceicer de Mer more than to have the summits of the two hills visible from the poop of a large ship, when the island is bearing betwixt E. ½ S. and S. E.; for if the low part of the island between the hills be *in sight from the poop*, bearing from E. by S. to E. S. E., you will be near the edge of the bank.

To sail through the channel inside, and along the coast.

When bound to China, by the Inner Passage, steer from Pulo Aor to pass close on the east side of Pulo Condore; from thence, a N. E. by N. course will carry you outside Britto Bank, and in the fair channel between Holland Bank and the coast, if there be no lateral current. The best guide in the night is not to approach the coast under 16 or 17 fathoms until certain of being to the eastward of Britto Bank, nor to deepen above 20 or 21 fathoms towards the western part of Holland Bank; the fair track betwixt these banks, and between the latter and the coast, being from 17 to 20 fathoms, until irregular soundings are got in the channel to the southward of Pulo Ceicer de Terre.

Pulo Ceicer de Mer.

PULO CEICER DE MER bears from Pulo Ceicer de Terre S. by E., distant 41 miles, its centre being in lat. 10° 32½′ N., lon. 108° 53′ E., and it is 4 or 5 miles in extent nearly N. E. and S.W. There are two small hills which form its extremities, one of them sloping, the other conical; and as these are discerned before the level land in the centre of the island, they appear sometimes like separate islands; they may be seen in clear weather about 8 leagues' distance from the deck of a large ship. Some rocks, with a reef, project about a mile from the north and S. E. parts of the island; and a rocky islet high above water, lying about 4 or 5 miles off its N. Western part, may be seen at 4 leagues' distance. The island is easy of access on the west side, where a ship may anchor occasionally; it is well cultivated, and inhabited principally by fishermen, who pay an annual tribute in salt fish and birds' nests, to the King of Cochin-China. The soundings extend a very little way to the eastward of the island.

Rocky islet.

Channels.

The channel between Pulo Ceicer de Mer and Holland Bank is from 3 to 4 leagues wide, and appears to be safe: several ships, in passing through it, have found the soundings irregular, from 12 to 9 and 8 fathoms, rocky, when they borrowed on the edge of Holland Bank; but on hauling towards the island, they always got into more regular depths of 18, 20, and 24 fathoms; the Milford had from 24 to 26 fathoms, in passing on the west side of the rocky islet, at about 2 or 3 miles' distance. The passage betwixt this islet and Pulo Ceicer de Mer seems also safe; for the American ship

* Perhaps W. ½ N.

Devotion went through it in 1803, and saw no appearance of danger. To the northward of the island, the depths increase to 35 fathoms, and decrease to 17 fathoms when it is just visible from the deck bearing about S. S. E.

PULO SAPATA, or SHOE ISLAND, bearing from the centre of Pulo Ceicer de Mer about S. by E. ½ E., distant 33 miles, is in lat. 10° 0′ N.,* lon. 109° 2½′ E., or 4° 28′ E. of Pulo Aor, 4° 41½′ West of the Grand Ladrone, and 22 miles West from Cape Varela on the coast of Cochin-China, by mean of many excellent chronometers. Pulo Sapata.

It is the easternmost of the three islands that go by the name of Catwicks, and may be seen 10 leagues from the deck of a large ship: it appears to be a high, inaccessible barren rock, frequented by numerous birds. When viewed in some directions it resembles a shoe, at other bearings it seems a large square column, and when bearing to the westward it assumes the form of a pyramid. Ships generally endeavour to see this island, or to pass within 6 or 8 leagues of its eastern side, in proceeding to, or from Manila, or to China by the Outer Passage. With Pulo Sapata bearing W. 8° N. distant three-quarters of a mile, the Discovery had 35 fathoms, and with it bearing South three-quarters of a mile, she had 31 fathoms, sand and coral.

THE PYRAMID, or LITTLE CATWICK, about 2 miles N.W. by W. from Pulo Sapata, is a small barren rocky isle, the peak of which may be seen about 7 leagues: a reef was thought to front it, until Captain Ross examined this, and the adjacent islands and dangers, in March and April, 1817; he could not perceive any danger near the Little Catwick, nor in the channel between it and Pulo Sapata, as will be observed by the following account, taken from the journal of the surveying ship Discovery. Little Catwick.

March 27th, a little past noon, having Pulo Sapata bearing South about three-quarters of a mile, passed between it and the Little Catwick, and sent the Investigator to examine the north side of the latter. At 50 minutes past noon, we were in 65 fathoms water in mid-channel between Pulo Sapata and the Little Catwick, without any appearance of danger whatever; when the latter bore N. by E. about one mile distant, we steered N. N.W. to pass its west end, and fell in with the Investigator coming close round its northern side, without perceiving any danger to extend from the Catwick. Channel between it and Pulo Sapata.

Until this examination of the passage between Pulo Sapata and the Little Catwick, by Captain Ross, it was not known to be safe, although several ships had passed through it in the night, when returning from China in dark blowing weather; when finding themselves at such times either close to Pulo Sapata or to the Little Catwick, or in the passage between these islands, they were necessitated to run through, often uncertain of their situation.†

Although this passage seems to be safe with a commanding wind, it ought not to be adopted excepting in a case of emergency, for it is contracted, and the currents are strong and irregular about these islands.

* Captain Ross made it in lat. 9° 59½′ N., lon. 109° 3½′ E.

† The ships hereafter named passed through this channel in the night. The ships Seton and Surprise, at midnight, November 8th, 1796, running under the goose wings of their fore-sails, saw Pulo Sapata bearing S. by W. about 2 miles, and finding they could not clear it to the eastward, bore away and passed between it and the Little Catwick. The Lady Melville passed through it in 1822, in the night: the Herefordshire and other ships have also passed through this narrow channel, during dark blowing weather in the night, before they were aware of their situation.

Ships passing here in the night, during the North-east Monsoon, ought to make proper allowance for a S. Westerly current, which is liable to deceive, and to carry them down upon the islands, particularly if the wind is strong at the time.

Great Catwick. ROUND ISLAND, or GREAT CATWICK, in lat. 10° 6′ N., bearing W.N.W. $\frac{1}{4}$ N. from Pulo Sapata, distant about $3\frac{1}{2}$ leagues, and nearly South from Pulo Ceicer de Mer, about 9 leagues, is a high barren island, of a rounded form, nearly of the same size and height as Pulo Sapata; it may be seen about 9 leagues, and is thought to be steep to. The channel betwixt this island and Pulo Ceicer de Mer is spacious and safe, with soundings of 25 or 30 fathoms near the latter, deepening to 45 and 50 fathoms in mid-channel, and towards the Catwick: when through it, the depths decrease quickly in standing to the eastward.

Contiguous channels. The channel betwixt the Great and Little Catwicks, may likewise be considered safe in day-light, but great caution is requisite when passing through it in the night, on account of the following danger.

Macclesfield, or La Paix Rock. THE MACCLESFIELD ROCK, or LA PAIX ROCK, said to have been seen many years ago, by the French ship La Paix, and to have been placed by her at nearly an equal distance between the Great and Little Catwicks: until lately its true position was not known to British navigators, although seen by the Macclesfield in 1721; even its existence was considered doubtful; and it is surprising that many ships, in passing through the channel between the Catwicks in the night, without knowing that a rock existed here, have all escaped the danger.

The European fleet from China, consisting of nine sail, under convoy of H. M. Ship Atheniene, saw the Great Catwick at midnight, March 13th, 1805, and passed between it and the Little Catwick. Several of the ships saw the latter and Pulo Sapata, and, by their white appearance from the moon's light, mistook them for *strange sails*, and thought the Great Catwick was Pulo Sapata. In the Arniston, breakers were seen bearing E. $\frac{1}{2}$ S., when the Great Catwick bore W. $\frac{1}{2}$ N.; the journal states, that breakers appeared to roll over a rock about a ship's length, and were very high on the north end of it, but the rock was not visible. Some ships of the fleet were to the eastward of her when the breakers were seen, but, excepting the Arniston, none of them perceived their dangerous situation.

The Gunjaver, January 7th, 1804, at half-past 8 A. M., when Pulo Sapata bore S. E. $\frac{1}{2}$ E., and the Little Catwick S. E. by S., saw the Great Catwick bearing W. $\frac{1}{2}$ N., and very high breakers a long way to the N. E. of it: bore away S. and S. S.W. to go between them and the Little Catwick. When the Little Catwick was on with Pulo Sapata bearing S. E. by E., and the Great Catwick W. by N. $\frac{1}{4}$ N., had 21 fathoms water in mid-channel, which appeared to be about 4 miles wide; but the weather being thick, with rain, the distance may not be very correctly stated.

H. M. Ship Grampus, with four China ships, passed between the Catwicks, October 17th, 1810, having rounded the north end of the Great Catwick within a mile; afterwards, at 11 A.M., a reef of breakers was seen from the Grampus between the Catwicks, bearing E. by S.; steered S. E. by S. between it and the Great Catwick: at half-past 11 the breakers bore N. E. one mile, Great Catwick N. by W. $\frac{3}{4}$ W. three miles, Little Catwick E. by S. $\frac{1}{4}$ S.

The Macclesfield passed between the Great and Little Catwicks November 20th, 1721, and her journal contains the following remark:—Saw some breakers lying about

2 miles* N. E. from the Great Catwick, which I believe are not seen in little wind and smooth water.

The position of the foregoing danger has been determined by Captain Ross, who, after passing between Pulo Sapata and the Little Catwick, March 27th, 1817, steered N.W. by W. till 3 P. M., having very smooth water, and the wind from South; discovered a small rippling bearing W. by N., for which steered, and when about half a mile S. E. from it, had 45 fathoms, rocky ground. Sent two of our boats, and one of the Investigator's, to examine the rippling, then wore, and passed about half a cable's length to the eastward of the boats that were round a rock; when our small cutter was holding on by it, she was in a transit line with the Great Catwick bearing N. 89½ W., and from the boat, the summit of Pulo Sapata bore S. 56¼ °E.,† the Little Catwick being three-quarters the length of Sapata to the southward of that island, or 2° 5′ to the right of its highest part. The rippling was found to be produced by a very *sharp point of a rock*, one foot under water, and at the distance of a few yards around it there are 12 and 15 fathoms water. The rock was so steep, that the boat's grapnel would not remain on it, and one of the men held her on by the boat-hook. When it bore South a cable's length, we had 38 fathoms, rocky ground, and from this position ran, by Massy's patent log, 5 miles to the Great Catwick, bearing South, distant about a quarter of a mile.‡ Captain Ross' description.

A shoal was formerly thought to lie S. E. of Pulo Sapata at several miles' distance, which is now believed not to exist. A collision of currents or tides is sometimes seen in the vicinity of these islands, producing ripplings in the sea, like breakers upon a shoal; which, no doubt, have been marked as dangers.

THE SOUNDINGS deepen fast, in approaching Pulo Sapata and the Catwicks from the westward; in a direct line, about mid-way between them and Pulo Condore, the depths are 27 and 28 fathoms, increasing to 65 fathoms when Pulo Sapata bears about N. E. 12 or 13 leagues. When it bears about N. N. E. 9 leagues, the soundings are 67 to 70 fathoms, but not always regular; the edge of the bank coincides nearly with the meridian of Pulo Sapata, for very deep soundings only are obtained a little way to the eastward of that limit. The depths increase to 110 and 120 fathoms, when Pulo Sapata bears N.W. by N. to N.W. ½ N., distant about 4 or 4½ leagues, and a little farther out there are no more soundings; a ship, therefore, being nearly in the parallel of this island, may be certain that she is to the eastward of it when soundings are not obtained. Soundings.

THE MINERVA BANK, situated to the N. Eastward of Pulo Sapata, was discovered by the Company's ship of this name, on her passage to China, August 17th, 1821. At noon, observed in lat. 10° 32′ N., steered N. E. ½ N. 5 miles, and about half-past noon, the water appearing very much discoloured, kept the lead going quick, had 40 fathoms first cast, then 35, 30, and 28 fathoms; shortened sail, and hove to, Minerva Bank.

* Captain Ladd, who passed near this danger in the Kellie Castle, at 3½ P. M. December 1st, 1827, says it is nearer to the Great than to the Little Catwick, but thinks, if a ship keep between 1 and 3 miles of the Great Catwick in passing the danger, she will be safe. The sea broke high over it at the time, but no rock was visible above water.

† This bearing should probably be E. 56¼° S.

‡ There appears to be some obscurity in this passage, but I conceive it to mean that the boat, from a position, a cable's length North of the Rock, ran 5 miles (on about a West course), until the Great Catwick bore South, a quarter of a mile distant. This distance and the preceding bearings place the rock further to the eastward than the position hitherto given in the chart.—Ed.

head to the S. Eastward; next cast had 39, 40, and 42 fathoms, and continued this depth by repeated soundings. From noon till 2 P. M. when lying to, had steered N. E. $\frac{1}{2}$ N. 8 miles, which gave 6 miles northing, placing the bank in 10° 38′ N., and good sights taken at the same time made the lon. 110° 18′ E. by mean of three chronometers. The soundings upon the bank were all coral rock, and it appeared to extend to about $1\frac{1}{2}$ miles in a N. E. direction, as in hauling to the southward the depth greatly increased. About a quarter past 2 P. M. bore away, and gradually increased the soundings from 45 to 50 fathoms, then no bottom at 55 fathoms.

COCHIN-CHINA, FROM CAPE PADARAN TO CAPE TURON.

Padaran Bay.

CAPE PADARAN, described in the last section, is the southern boundary of the Great Bay of the same name, called also Phanran Bay, after a considerable town at the head of it, where there is a tolerable harbour, formed by a reef, dry at low tide, that projects about 2 miles from the western shore, and shelters vessels from the sea. On the north side of Cape Padaran there is a bight, where vessels may anchor in the South-west Monsoon, and where fresh water may be found at the south side of a small sandy bay: large ships ought not to anchor under 9 or 10 fathoms, for the bottom is foul near the shore.

Anchorage.

The ship Admiral Gambier sailed from Canton River September 5th, 1812, and reached Cape Varela on the 9th; meeting here with strong South and S.W. winds, and squally weather, she continued to beat against them near the coast till the 23rd, then stood into Padaran Bay, where she anchored in 12 fathoms, with the eastern extremity of Cape Padaran bearing S. S. E., northern extreme of the bay N. N. E., distant from the shore about 2 miles. She cut firewood, filled up her water, and sailed from this anchorage 26th September.

To sail into the harbour.

After weighing from this anchorage, or having passed Cape Padaran, if bound to the harbour, steer for the middle of the bay, to avoid a reef and foul ground contiguous to the western shore; then keep to the northward, for the north entrance point of the harbour, until the reef on the western side is plainly seen.

When near the entrance, a mass of rocks, one over the other, like ruins, will be perceived close to the shore at the N.W. side of the harbour, and beyond it an isolated hill; keep the highest rock of the mass on with this hill, in steering past the reef at the distance of a third of a mile; 6 or 7 fathoms will be the least water. When inside the reef, steer more westerly, and anchor in 4 fathoms, good holding ground. There is a rivulet at the bottom of the harbour, and a stream of fresh water, where the reef joins the shore.

North side of the bay.

To proceed from the harbour, the directions which have been given for passing the reef must be observed; when clear of it, avoid the north side of the bay, which is rocky; steer therefore to the S. E. until the north point of the bay is brought to bear N. E., and pass it at the distance of 3 miles; this point is low, surrounded with rocks

under water, close to which there is a dry sand-bank. From hence to False Cape Varela, the coast is very mountainous and steep, extending nearly N. E. by N.; a little to the southward of that cape there is an opening into VUNG-GANG, a great basin or cove, inhabited by fishermen, which is darkened by the steep surrounding mountains; but it is uncertain whether or not this cove will admit ships, and afford safe anchorage.

FALSE CAPE VARELA,* called MUI-DAVAICH by the natives, in lat. 11° 44′ N., bearing from Cape Padaran about N. N. E. ½ E., 8½ or 9 leagues, is formed by a very high oblong mountain of great magnitude, which, from the steep cliffs that front the sea, rises with a gentle acclivity inland; it may be known from the other prominent headlands, by its great height, its convex outline, and by its regularly sloping to seaward. In crossing the bay of Padaran, soundings of 40 to 50 fathoms may be got if not far out; the north point ought not to be approached under 40 fathoms in the night, because it is fronted by foul ground, and a small island lies a little way from the shore. False Cape Varela, and adjacent coast.

False Cape Varela forms the south point of the entrance to Camraigne Bay, and is steep to; it may be approached close, having 20 fathoms near the shore, and betwixt the shore and the island that lies to the N.W. there is a narrow passage, fit for small vessels, with 12 to 14 fathoms water.

CAMRAIGNE, or CAM-RANH BAY (entrance), is in lat. 11° 49′ N., bounded on the south side by the land of False Cape Varela and the contiguous isles, and by the high island TAGNE on the north side; this is called the large entrance, in which there are from 18 to 14 fathoms water. The small entrance is formed betwixt the north point of the island Tagne and the opposite point of the main, in which there are 7 and 8 fathoms water; but it is very narrow, and should not be used except in a case of necessity. Camraigne Bay.

The outer harbour of Camraigne is to the N.W. of the island Tagne, having 10 and 12 fathoms water, and is protected from the sea by that island. About 1½ miles farther to the N. Westward is the entrance to the inner harbour, about three-quarters of a mile wide, formed by a point of land on the north side, and a long neck or narrow peninsula to the S. Westward: the inner harbour is an extensive lagoon. The best anchorage is a little inside the entrance, in any depth from 10 to 6 or 7 fathoms; for all the western part is shoal, and the shores around the western and northern parts of the harbour are lined by a coral bank. From the northern extremity of the harbour, a river runs to the northward parallel to the coast for 5 or 6 leagues; it is separated from the sea by a narrow neck of land, consisting of small sand hills, and a great barren sandy plain. Outer and Inner Harbours.

The source of the river lies in marshy ground, not far from the city of Nhiatrang. There are no hidden dangers in either of the outer or inner harbours, and they are safe for ships of any description, the bottom being generally mud, and good holding ground. This harbour is mostly inhabited by fishermen.

THE WATER ISLANDS,† in lat. 12° 2′ to 12° 4′ N., are of moderate height, distant 3½ or 4 miles off the main land to the northward of Camraigne Bay: the southernmost is called Hone Noi; the other, which is the largest, Hone Ngoai; it Water Islands.

* Named from a rock or knob upon the mountain, a little inland, having some resemblance to that over Cape Varela, although not nearly so conspicuous.

† Called also Fishers Islands.

has some islets and rocks near it. The channel inside these islands is said to be very safe, with 12 fathoms water near the shore, and there is good anchorage opposite to them in the South-west Monsoon, close to the coast at the Great Plain; the passage inside these islands may be adopted, if you intend to proceed into Nhiatrang by the south entrance. The great sandy plain is about 3 leagues in extent, ending at the south entrance of Nhiatrang Bay; at each extreme there is a bluff point, and the bay comprehended between them is called Dgiay Bay. It must be observed, that although the passage inside the Water Islands is thought to be safe, there is to the north-westward of these islands, in the fair track, a rocky patch, on which the Lord Castlereagh shoaled suddenly, August 18th, 1807. She had worked out of Nhiatrang Bay in the morning, betwixt Tre Island and the two islands near the shore, and observed at noon in lat. 12° 8′ N.; after steering South 4 miles, with the wind at E.S.E., the water shoaled suddenly from 13 to 6½ fathoms, and the helm was put down; rocks and sea-weed were seen under the bottom, but the least water by the lead was 6½ fathoms; she deepened to 13 fathoms in standing about 2 cables' lengths to the N. Eastward. When upon this shoal patch, Hone Noi, the southernmost Water Island, bore S. E. ½ E., the bluff point at the northern extremity of Dgiay Bay N.W. ½ W., the bluff point at its southern extreme S. by E. easterly, distance off the sand downs on the shore of the bay 2½ or 3 miles.* Inside this rocky patch there are 12 and 11 fathoms, regular soundings.

Rocky bank.

Nhiatrang Bay.

NHIATRANG BAY is large, and is protected by Tre Island and its adjoining isles to the southward, and by the main land and Fisher Islands to the northward and eastward. To proceed into the bay by the south entrance, you may pass on either side the Water Islands, then betwixt Tre Island and the two isles that lie to the south-westward of it, nearly in the passage; the soundings are regular, from 12 fathoms at the entrance to 6 and 7 fathoms between the west point of Tre Island and the main, where the channel is 1¼ or 1½ miles wide. The passage contiguous to the main, inside the two isles that lie in the channel, is also safe; but betwixt them and Tre Island is one wider, and on other accounts preferable.

The anchorage at Nhiatrang is in 8 fathoms, good holding ground, with the entrance of the river bearing about N. W. or N.W. ½ N. 1 mile, and Tre Island E. S. E. The river has a bar, and will only admit vessels drawing 7 or 8 feet water; it communicates with Nhiatrang city, about 5 miles to the westward; this city is the capital of the provinces Nhiatrang and Binkang, and has a fort, built in the European manner, by Monsieur Oliver, a French engineer. Here, they manufacture some silk and other articles, and carry on trade with different parts of the coast; a ship in want of wood or water may obtain them by touching at this place.

The Lord Castlereagh, on her passage from China, anchored, August 15th, 1807, in Nhiatrang Road, in 9 fathoms, stiff clay, with the entrance to the river N.W. ¾ N., White Rock N. by E., Shala Island N. E. ½ E., Pyramid Island E. by N., Tre Island from E. ½ S. to S. E. ¼ S., and a ledge of rocks off it bearing E. S. E. ¼ S. She watered with her own boats in the river; the water was found very good a little inside the entrance at low water, and about 4 or 5 miles up, the water was fresh at half ebb. About 2 miles up the river there is not depth sufficient for a loaded long boat at half-ebb, there being several shoal banks stretching across it. The rise of tide 5 or 6 feet, high water at 8½ hours on full and change of moon, and there is *one* flood and *one* ebb in 24 hours. Tre Island, in lat. 12° 16′ N., is high, and contains several coves, where vessels may repair damages: the Upton Castle anchored to the westward

Tides.

* These bearings are irreconcilable with the positions of the points as given in M. Dayot's chart.

of Tre Island, between the inner island and the main, to the southward of Nhiatrang Road, and found it good anchorage, and convenient for watering.

The northern channel leading to Nhiatrang Road, although wide, has a coral bank nearly in mid-channel, opposite the large Bay of Binkang, which makes it proper to keep nearest to Tre Island. There is a passage between the south point of Binkang Bay and Turtle Island, which lies off it; and there is also a passage between the small Isle Seche and the east point of the same bay; the coral bank mentioned above is in the line of transit with the outer extremity of the point eastward of Binkang Bay and the little islet S. S. Westward of that point. Captain Ross was twice on this coral bank, and did not get less than 4 fathoms water, although it is said, by M. Dayot, to have as little as 3 fathoms on it. Dune Island is the southern one of two small islands, next to the northward of Tre, and when upon the coral bank Dune Island bore S. S. E., and the small white rock called Seche was in one with the northern extreme of the land.

FISHER ISLANDS,* lying to the N. E. of Tre Island, form a group of two or three barren islands, with some rocks close to them; Pyramid Island, one of these, in about lat. 12° 21′ N., is a high, regular cone or pyramid, conspicuous as a mark in sailing along the coast. This island is about $1\frac{1}{2}$ or 2 leagues to the southward of the northernmost one, called Shala; and there is a channel with 25 to 30 fathoms water between them. The southernmost, called Dune Island, which has already been mentioned, is of moderate height, flat on the summit, like the crown of a hat, when viewed in some directions; the channel betwixt it and Tre Island is safe, and there are soundings of 60 to 75 fathoms about 3 or 4 leagues outside these islands; the soundings inside Pyramid Island are from 16 to 20 fathoms, decreasing regularly close to the South side of the entrance of Hone Cohe Bay. Fisher Islands.

HONE COHE BAY, about $2\frac{1}{2}$ or 3 leagues northward from Pyramid Island, has several islands in it; the outermost, called Bac, has to the eastward of it, about a mile, a rock called the Button, and three islands to the westward. Betwixt Isle Bac and the small one to the westward there is a safe passage, and also between the latter and the other two islands, which lie much nearer the western shore, but the widest channel is outside Isle Bac, between it and the east point of the bay. Having passed these islands, if bound into the bay, steer to the N.W. in mid-channel betwixt the point on the west side that forms Hone Cohe Harbour, and a small island to the eastward; then steer westerly to round the point, and afterwards to the southward to the anchorage on the west side of it in 4 fathoms good holding ground, sheltered all round; here, the village Hone Cohe and some other habitations are situated. Hone Cohe Bay.

On the east side of the bay are several islands at the entrance of a cove, into which ships may warp, and moor to the trees, there being plenty of water and no danger; but vessels do not usually go there, as the cove is inhabited only by a few fishermen. This cove or harbour is formed by high mountains, and communicates with the sea by a passage called Cua-Be, or Little Passage, to the S. Eastward, bounded on each side by high land, resembling steep perpendicular walls; it is unknown whether this passage is navigable, or otherwise. There are good soundings along the east side of the bay; but to the northward and to the westward it is rocky and shoal near the shores; in the middle of it, there are several islands. The tide rises 5 feet at Hone Cohe, high water at $11\frac{1}{2}$ hours on full and change of moon. Tides.

* This name, in some charts, is applied to the group to the southward of Tre Island, (see Water Islands, p.337).

Three Kings.

THE THREE KINGS are three rocks, lying about $1\frac{1}{2}$ miles East of the point of Cua-Be; they are bold to approach, having 30 fathoms water near them, with a passage betwixt them and the point. About 5 miles farther to the northward lies the small Doi-Moi, at some views resembling a turret or sentry-box; the point, from which it is separated by a very narrow channel, is the easternmost land of Cochin-China, being a little to the eastward of the meridian of Cape Varela, and the land between them forms a concavity called Honne Gomme Bay. The soundings in this bay are regular, and there is good anchorage in 8 or 10 fathoms, sandy bottom, at the south side, about 2 miles to the W. N.W. of the point, near a small island: water may be got at the southern extremity of the sandy flat, but in the dry season wells must be dug in the sand, at some distance from the sea. Fresh water may be procured in this manner on most parts of the coast. The sandy flat, which extends from the high land of Cua-Be to that of Cape Varela, is a neck of land scarcely a mile broad in some places, separating the bottom of Honne Cohe Bay from the sea, and the three islands in the middle of that bay may in passing be perceived over the sandy flat.

Honne Gomme Bay.

Water.

Ong-Ro Harbour.

ONG-RO HARBOUR, to the S.W. of Cape Varela at the northern extremity of Honne Gomme Bay, seems safe at all times; it is about a mile wide at the entrance, stretching about 3 miles inland in a N. E. direction, with soundings of 8, 7, and 6 fathoms, close to the village at the upper part. The bottom is fine clay, except within 100 yards of the shore on either side it is frequently sand or coral rocks: on the west side the harbour fresh water may be procured in several places, but the best watering place is about half-way up on the same side, to the N. Eastward of a little cove. Pulo Varela is a small island near the shore, to the S. W. of the entrance of the harbour. To proceed into the latter, bring the tunnel or peak to bear N. N.W., and steer for it with this bearing, which will lead into the entrance of the harbour, where you will have 10 or $9\frac{1}{2}$ fathoms water.

Cape Varela.

CAPE VARELA, or PAGODA CAPE, is formed of steep cliffs, extending nearly North and South 2 or $2\frac{1}{2}$ miles, having in the middle of them a small sandy bay, where a stream of excellent water descends from the mountain into the sea. This cape is in lat. 12° 55′ N., lon. 109° $24\frac{1}{2}$′ E., or 14° $19\frac{1}{2}$′ West from the Grand Ladrone, by mean of a series of admeasurements with excellent chronometers, at various times. The Cape itself may be seen 9 or 10 leagues, and when first perceived in coming from the northward appears like an island, the gap of low land which joins it to the mountain behind being then depressed under the horizon. This mountain* stands directly over the Cape, having upon its summit a large perpendicular rock, resembling a pagoda or chimney, called DA-BIA by the natives, which makes it very conspicuous; and it may be seen about 20 leagues' distance from the deck of a large ship, either from the northward or southward, in clear weather; but the summits of the mountains are frequently obscured by clouds or vapours, particularly in the North-east Monsoon. The Cape may be approached very close, there being 20 and 25 fathoms water around it, at a small distance from the shore.

Directions.

From abreast False Cape Varela, the course is N. by E. $\frac{1}{2}$ E. and N. by E., until Pyramid Island and the other Fisher Islands are passed, then N. $\frac{1}{4}$ E. and North to Cape Varela: the best track in the night, with a fair wind, is to keep from 2 to 3

* There is a hot spring in the middle of the Cape Mountain, and there is said to be silver ore in some of these mountains, which form double and treble ridges behind the cape.

leagues off the different headlands, which, with the Water Islands and Fisher Islands, will be visible at that distance in passing along, if the weather be clear. When the weather is unfavourable, edge farther out, to give the islands a proper berth; and if soundings are obtained you will not be far from them, or some of the headlands.

About 4 or 5 miles N. ½ W. from Cape Varela lies a mass of rocks, some of them level with the water's edge; but the central one is considerably elevated, with a large stone on its summit, appearing as if placed by art: in passing near it, when abreast, a hole through is perceived below the upper stone, which has given it the name of PERFORATED ROCK. There is a safe passage betwixt it and the main land, having soundings of 20 to 25 fathoms. Perforated Rock.

PHUYEN BAY is formed by the land taking a westerly and N.W. direction from Cape Varela to Phuyen River, which is distant from the Cape about 4 leagues. About 6 or 6½ leagues N.Westward from Cape Varela, not far inland, stands a high isolated mountain, which, being a regular cone, is called CONICAL MOUNTAIN, or EPERVIER; a little to the southward of it there is a sloping piece of land, with a rock or pagoda on it, which is only discerned when near the shore. Here, the inland mountains recede to the westward, a great way from the sea, and the Cape Varela Chain stretching also to the westward, a large space of low land is formed close to the sea round the Bay of Phuyen, betwixt Cape Varela and Conical Mountain. The entrance of Phuyen River is to the southward of this mountain, and will only admit boats. A ship may anchor off it in 8 or 9 fathoms, good ground, with Conical Mountain bearing about N. N.W., and a pagoda on a mountain some distance inland to the N.W.; but these mountains are frequently obscured by clouds. The soundings across the Bay of Phuyen are 30 to 35 fathoms, about 4 and 5 miles off shore. Several flat islands lie near the coast on the north side of the bay, of which, MAIGNIA is the most considerable, distant about 2 miles from the shore, having an indifferent passage inside, of irregular depths, and rocky bottom; close to it on the outside there are 23 and 24 fathoms water. Abreast this island there are on the coast, near the sea, two small hummocks, one of them resembling a sugar-loaf. Phuyen Bay, and the circumjacent coast. Maignia Island.

PHUYEN HARBOUR (the entrance), in lat. 13° 23′ N., is about 5 miles to the northward of Maignia Island, and 3½ leagues S. S. Westward from Pulo Cambir; it is about 2 miles wide, with 10 and 11 fathoms water on either side the small island that lies a little inside, called Nest Island, which ought not to be approached close on the west side, because a reef projects about a musket-shot in that direction. Phuyen Harbour.

This harbour, one of the best in the world, branches out into three harbours inside, distinguished by the names of XUAN-DAI, VUNG-LAM, and VUNG-CHAO. The anchorage of Xuan-Dai is on the south side, in 7 or 8 fathoms, sandy bottom, with the entrance of the river bearing South, and Nest Island about N. E. by E. That of Vung-Lam is about 2 miles more to the N.Westward, in 7 fathoms, mud, on the north side of an island that fronts the cove, with the village bearing S.W. by W. Vung-Chao, about a league farther northward, on the east side the great or inner harbour, is sheltered from every wind by circumjacent mountains, and the anchorage is in 4½ or 5 fathoms, with the houses in the grove of coco-nut trees bearing S. E. to S. E. by E. On the north side the harbour a coral reef lines the shore, which is visible at low water, and stretches around the bottom of the inner harbour. In proceeding towards Vung-Chao, the Buoy Rock must be avoided, which is nearly even with the water's edge, and lies about a third of a mile from the eastern shore, outside the point that forms the east

side the entrance to the inner harbour. There is a small cove, called Vung-la, under the north point of the outer entrance, where two or three vessels might be hove down, if requisite. The country around this excellent harbour is well cultivated, and, together with the houses and huts interspersed along the hills, present in entering it a beautiful landscape. The province of Phuyen is better cultivated than any other in Cochin-China.

The Company's ship Vansittart, Captain Dalrymple, having sailed from Singapore, October 3rd, 1827, and reaching lat. 14° N., lon. 110° E., on the 20th, encountered a steady North-east Monsoon; bore away for Phuyen Harbour to fill up her water, where she anchored on the 22nd, in $8\frac{1}{2}$ fathoms, the northern entrance of the harbour N. 72° E., southern entrance S. 28° E., Nest Island S. 19° E., Island off Vung-Lam N. 38° W., Buoy Rock N. 45° W., northern entrance of the inner harbour N. 31° W., western entrance of ditto N. 48° W.; the watering place is in a small bay N. by E., in which was a fine cascade close to the beach, and very convenient for watering. The Buoy Rock was covered at half-flood, and appeared like a boat at low water. Maignia Island, to the southward of the entrance of the harbour, is high, and was shut in with the southern point of the entrance from the ship's anchorage, which anchorage was rather too far to the southward in the North-east Monsoon. The Vansittart sailed from Phuyen Harbour October 24th, went by the Palawan Passage and coast of Luconia, had mostly favourable winds, and arrived at Macao November 14th.

Watering Place.

Gain-ba Point.

GAIN-BA POINT is about a league to the northward of the entrance of Phuyen Harbour, with small bays formed on each side of it, where vessels may occasionally anchor; in the bay on the south side, there is a fishing village. Gain-ba Point, and the coast beween it and the entrance of Phuyen Harbour, may be passed very close in 10 or 12 fathoms water. About a league to the northward of Gain-ba Point lies another point, called Vung-Trich, and about 4 miles beyond the latter, the Point Vung-Mon; these two points are also bold, and may be passed close, in 10 or 12 fathoms. The bay of Vung-Mon, situated betwixt these points, is safe to approach, with regular soundings in it towards the shore.

Cou-Mong Harbour.

COU-MONG HARBOUR ENTRANCE, situated on the south side of the above-named bay, in lat. 13° 29′ N., is very narrow, with 7 and 8 fathoms water in it, 5 and 4 fathoms a little inside, and 3 to 4 fathoms to the southward of the small island in the middle of the harbour. This is an excellent cove for small vessels, or those of middling size; and there is a little village among the coco-nut trees to the northward of the island. Vung-Mon Point, like that of Gain-ba, has a bay on each side, with a small fishing village in the northern one: a vessel intending to anchor there, must give a berth to the northern extremity of the point, for rocks project from it above and under water, having 10 fathoms close to them; the anchorage also is in 10 fathoms.

Pulo Cambir.

PULO CAMBIR (the centre), in lat. 13° 33′ N., and 4 or 5 miles to the westward of the meridian of Cape Varela, has a regular sloping appearance, and may be discerned about 6 leagues from a ship's deck; it is of considerable size, extending N.N.W. and S.S.E., having a few fishermen's huts on the S.W. side; and at a small distance S. Eastward from its south end there are some sharp peaked rocks, called the Two Paps. This island is nearly abreast Vung-Mon Point, from which it is about 4 or 5 miles distant; the channel betwixt it and the coast is very safe, with 12 and 13 fathoms near Vung-Mon Point, 20 fathoms towards Pulo Cambir, and outside the

island, at a small distance, there are no soundings. There are 23 fathoms with it bearing N. by W. 5 or 6 miles.

DATE ISLAND, about 2 or $2\frac{1}{2}$ leagues to the northward of Vung-Mon Point, and $1\frac{1}{2}$ miles distant from the main, is of round form, covered with trees; betwixt it and another round island nearer the shore, there is a passage with 5 and 6 fathoms water, and there are some rocks above water to the northward of the island last mentioned. From Vung-Mon Point to opposite Date Island the coast is steep and very mountainous, forming a considerable bight called Cambir Bay. Date Island, and adjoining coast.

QUINHONE HARBOUR, about North 6 miles from Date Island, is bounded on the west side by a neck of sand about 4 miles long, and on the east side by high steep land. Close to the point on the east side, and within it, there is plenty of water; the harbour is sheltered from southerly winds by the curved form of the high land on that side the entrance, and is protected by forts built on the point; but large ships are prevented from entering it by a shoal bank that extends a long way out from the western point, and which, stretching across, joins to the land on the east side of the entrance, and forms a bar, on which there are only 3 and $3\frac{1}{2}$ fathoms water. The deepest water is close to the point on the east side the entrance, where, Capt. Purefoy says, a ship may carry from $3\frac{1}{2}$ to 4 fathoms on the bar, at high water spring tides: inside of it, the depth increases to 7, 8, and 10 fathoms. The western part, and bottom of the harbour, is a spacious lagoon, with shoal water; several small rivers fall into it, one of which communicates with the City of Quinhone, situated about 5 leagues to the westward, and is the capital of the province of the same name. This harbour was a place of considerable trade, prior to the long war between the King of Cochin-China and his rebellious subjects. A ship not intending to go into the harbour may anchor outside the bar in $4\frac{1}{2}$ fathoms, good holding ground, with the Sandy West Point a little open with the east point of the entrance. Quinhone Harbour.

CAPE SAN-HO, in lat. 13° 44′ N., lon. 109° 14′ E., about $2\frac{1}{2}$ or 3 miles East from the entrance of Quinhone Harbour, is a high bluff headland, forming the eastern point of the Bay of Quinhone: close to the land, a little to the northward of the cape, there is an island, called Hau by the natives; and the coast, which extends about 5 miles North from the cape, is very steep and high. Abreast the north point of this high land there are some small isles; one of them, called Cau, is a round islet, about one mile off the point; and nearly $1\frac{1}{2}$ miles outside of this there are some rocky islets, named Hom-Cone and Hom-Co by the natives, and by Europeans, Black Jack. Between these and Cau Isle, and also inside the latter, vessels may occasionally pass, there being 15 or 20 fathoms water around them. On the north side the point opposite these islets, during the South-west Monsoon, there is good anchorage fronting a small bay formed by the point. Cape San-ho.

From Cape Varela to Cape San-ho, the course is N. by W.; or N. $\frac{1}{2}$ W. about 19 leagues, to pass outside of Hom-Cone, and the other islets that lie to the northward of the latter cape: soundings will not be got in this track, unless near the coast. Course along the coast.

A little inland there is a mount in the vicinity of Quinhone City, with a spired pagoda on it; further to the northward there is a mountain with a tower on its summit, and the tower is crowned with a small spire or funnel; the latter is in about lat. 14° 6′ N., and they are discernible when sailing along the coast at a considerable distance.

Buffalo, and adjoining coast.

BUFFALO ISLAND, in about lat. 14° 11′ N., and 4 or 5 miles distant from the high land abreast, is a convex rock of sloping form, moderately elevated, but will not be seen in the night until it is approached very close. It lies 5 or 6 leagues to the northward of the north point of the high land that forms Quinhone Harbour; from which point, the coast is low for some distance, and again becomes high opposite Buffalo. The water is very deep outside this rock, and the coast to the westward is bold and safe to approach, having soundings of 14 and 16 fathoms near the shore. A fleet of ships from China, having no observations, got close to this part of the coast in the night; some of the ships passed outside the Buffalo, others passed between it and the main, and found the channel safe, with regular soundings.

Nuoc-ngol.

NUOC-NGOL, or Fresh Water Point and Bay, lie about 3 leagues to the northwestward of Buffalo Island; there is a small island nearly touching the point, on the south side of which is the bay, having a village close under the point; and there is good anchorage in 10 or 12 fathoms, sandy bottom.

Turtle Island.

TURTLE ISLAND, about 3 or 4 leagues farther to the northward, and 4 miles off shore, is small, and very little above water; but there is a safe channel betwixt it and the shore. There are soundings of 65 or 70 fathoms, about 3 or 4 leagues off this part of the coast.

Tamquan River.

TAMQUAN RIVER lies to the N. W. of Turtle Island, in about lat. 14° 39′ N.,* at the northern extremity of a sandy flat, having a bar at the entrance, passable only by boats at high water. The anchorage, in 7 or 8 fathoms, is mud and sand, partly sheltered from northerly winds by the coast stretching out about 2 miles eastward from the north side of the river.

Tiphou River.

TIPHOU RIVER is a few miles more to the southward, in the middle of the sandy flat; the anchorage off this river is in 7 or 8 fathoms, sandy bottom.

Coast from thence to Bantam Cape.

From the Point of Tamquan the coast extends North a little easterly about 2 leagues, then it takes a direction nearly N.W. by N. about 7 leagues, to Quan-ngai River; it is steep and bold to approach, having 30 fathoms within 2 or 3 miles of the shore; contiguous to the sea the coast is of moderate height, but the country is very high inland. There is anchorage off Quan-ngai River: Cape Batangan, about 2 leagues to the N. E. of it, projects to seaward, and forms a bay on the south side; on this side the cape, about a mile distant, there are some rocks, called Rocky Islands, nearly even with the water's edge, betwixt which and the cape, the country vessels sometimes pass. The coast from this cape to Bantam Cape extends nearly N. W. about 4 leagues, having soundings of 20 and 25 fathoms near the shore.

Pulo Canton.

PULO CANTON, called COLLAO-RAY by the natives, in lat. 15° 23′ N., lon. 109° 6′ E., or 4° 38′ West from the Grand Ladrone by chronometers, is about 4 leagues N. E. from Cape Batangan. It is of considerable size, discernible about 9 leagues from the deck of a large ship, and has a level aspect when viewed from the southward: on the west side it is inhabited, well cultivated, and fresh water may be procured here. A reef projects from the S. E. end of the island; and to the northward, there are overfalls and rocky bottom, extending about a league from it and the Low Island that lies

* Another account places it in lat. 14° 32′ N., which may probably be nearer the truth

to the N.W. of Pulo Canton. The N. E. sides of these islands should not be closely approached, for although it is not known that danger exists, overfalls of 15 to 7 fathoms have been experienced about 2 or 3 leagues to the northward of Pulo Canton. When it bears S. S. E. 4 leagues, there are 50 fathoms water.

Channel. The channel betwixt the island and the main is very safe, with soundings of 25 to 34 fathoms; within 2 or 3 miles of the main, the depths are generally about 30 fathoms, decreasing to 25 fathoms towards Pulo Canton; the low island to the northward should not be approached.

Passage along the coast in the South-west Monsoon. It may be proper to observe, ships adopting the inner passage to China during the strength of the South-west Monsoon, in June, July, and August, ought not to edge off from the coast of Cochin-China until they pass within sight of Pulo Canton, particularly if the winds are light and baffling; in such case it is advisable to steer well to the northward towards the south part of Hainan, to prevent being driven near the N. Western extremity of the Paracels, should a N. Westerly storm happen to blow from the Gulf of Tonking, which has been frequently experienced in June and July.

Port Qui-Quick, and coast around. PORT QUI-QUICK, bearing about W. by N. from Pulo Canton, is formed on the west side of Cape Bantam, close to the foot of high mountains; it is about 2 leagues wide, and 1½ leagues deep, with some islets in it, and small creeks where fresh water may be procured; and it affords good anchorage in the South-west Monsoon. At the N. Western extremity of the bay, there is a small bay or cove under Happoix Point, said to afford shelter in the North-east Monsoon; opposite to it, Happoix River may be discerned, which extends a great way inland.

From Happoix Point, the coast extends nearly N.W. by N. about 15 leagues to Cape Turon, and in this space the country is mountainous a little inland. About 4 leagues northward from Happoix Point lies the island of FALSE CHAM-COLLAO; it is about 4 leagues off the coast, of considerable height, and a reef is said to project from its southern extremity. False Cham-Collao.

Cham-Collao. CHAM-COLLAO ISLAND (the south part), in lat. 15° 54′ N., about 5 leagues to the N. Westward of the former and 3 leagues distant from the main, is a high island, about 2 leagues in length N. N.W. and S. S. E., having some islets adjoining its south end, and others projecting to the westward from its N.W. part. It is inhabited, well cultivated, and the anchorage on the west side, in 4 or 4½ fathoms near the village, may be considered a safe harbour in all winds. The channel betwixt these islands and the main is safe, with soundings mostly from 6 to 8 fathoms; and in some parts 5 fathoms, to the westward of Cham-Collao. Opposite this island lies the entrance of Fai-fo River, which, by a narrow arm of the sea, communicates with Turon Bay: near the entrance of Fai-fo River there is a mass of marble rocks, very conspicuous when sailing near the coast.

Turon Bay. TURON BAY* lies to the north-westward of Cham-Collao Island, and about 5 leagues to the northward of Fai-fo River. Cape Turon, or Tien-Tchu, in lat. 16° 5′ N., lon. 108° 15′ E., by chronometers and lunar observations, is the easternmost extremity of

* The description of the coast of Cochin-China, from Cape St. James to Turon Cape and Bay, is partly taken from Monsieur Dayot's excellent survey, which Mr. Drummond, now Lord Strathallan, kindly allowed me to have translated from the French Original, in his possession, at Canton, in 1804, and partly from my own observations made in eight voyages, sailing along the coast. The position of Cape Turon, by M. La Place, is lat. 16° 8′ N., lon. 108° 20′ E.

the peninsula that forms the east side of Turon Bay; and Collao-Hanne, or Turon Island, in lat. 16° 11′ N., lies close to the point of land that forms the N.W. side of its entrance. The entrance of Turon Bay is about 4 or 5 miles wide, with regular soundings of 15 and 14 fathoms, decreasing inside to 8, 7, and 6 fathoms. The northern shore of the peninsula ought not to be approached close, for a reef, on which the sea sometimes breaks, projects about three-quarters of a mile from the third point; the inner point of the peninsula is also joined to a small contiguous island by a shoal. This small island is in lat. 16° 7½′ N., and the common anchorage is on the south side of it and the point, in 5 or 5½ fathoms, where ships are sheltered from all winds. This is an excellent harbour, affording poultry and other refreshments, from the adjacent villages; several rivers fall into the bay, and the depths decrease regularly towards the circumjacent shores, but Turon River and Sandy Isle, at the eastern side of the bay, are lined by a shoal bank. This was formerly a great place of trade, and some European nations had factories here; but no trade has been carried on by Europeans to this port for a considerable time past. The peninsula and Turon Island are both high, and the country inland is generally high and mountainous. The soundings about 2 or 3 miles outside Cape Turon are 24 to 25 fathoms, the same depths are got about 2 or 2½ leagues to the N. Eastward of the island, abreast the entrance of the bay; and the bottom is generally mud or ooze.

Approaching Turon from southward, the mass of marble rocks appears insulated, resembling a castle; a few miles to the northward of which the Cape Peninsula is perceived, with two peaked hills on it, one of them much higher than the other, and united by a low, narrow isthmus: having approached the Cape Peninsula, steer round it at a moderate distance, into the harbour. Turon Bay is called Han-san by the natives.

TONKING GULF AND HAINAN ISLAND.

Tonking Gulf.

TONKING, or TUNG-QUIN GULF, is that extensive bight formed in the coast between the parallels of 17° and 22° N., and which is rendered a deep inlet by the peninsula of Lui-chew-fu and the island of Hainan, which protect it, and in a great measure inclose it to the eastward. The entrance between Tiger Island and the S.W. part of Hainan is about 110 miles wide, which is the general width of the gulf itself. The gulf has several islands contiguous to the western shore, and at the bottom of it numerous small islands and shoals. There are soundings all over it, 45 and 40 fathoms in the middle, decreasing towards either shore; the bottom is generally soft, fit for anchorage. In some parts the soundings appear to be irregular, for the Rolla,*

* This ship, bound from Canton to England with teas, on account of the Company, made a dangerous and singular mistake. She left the Grand Ladrone February 6th, 1804, steered for the Inner Passage, saw Pulo Canton bearing S. by W. 6 or 7 leagues on the 9th, which they mistook for an Island of the Paracels. Afterwards she stood to the northward in the night, and to the westward in the day, endeavouring *to force* a passage through, amongst, or to round the northern limits of the Paracels; but was always obstructed by a chain of islands and shoals. At last, on the 16th, they observed in lat. 17° 28″ N., had regular soundings two days in the entrance of the Gulf of Tonking; shortly after, saw Tiger Island bearing S. E., and having tried for seven days

in lat. 17° 25′ N., to the northward of Tiger Island, shoaled from 35 and 30 fathoms, mud, to 10 fathoms on a bank, steering W. by S.; and soon deepened again to 25 and 30 fathoms, steering W. by N.

CAPE CHOUMAY, or CHOUVAY, in lat. 16° 21′ N., bearing N.W. by W. 8 leagues from Cape Turon, has good anchorage in a small bay on the west side, where there is a river; and a little farther to the N.W. there are other rivers; the coast between these two capes forms a bight, and a river falls into it. Cape Chouvay.

HUE, or HUE-FO RIVER, in about lat. 16° 35′ N., distant 7 leagues N.W. by W. from Cape Chouvay, has good anchorage off it in 6 fathoms, mud, and upon the bar there are about 2 fathoms at low water. The city of Hue, about 4 or 5 leagues up the river, was formerly the residence of the King of Cochin-China; when the northern provinces rebelled, it became the seat of the rebel government, but has again, with these provinces, been retaken by the king, who at times resides in it. This river is generally considered as the boundary betwixt the coast of Cochin-China and that of Tonking. Hue River.

CAPE LAY bears about N.W. $\frac{1}{4}$ W. from Hue River, the coast between them being low and sandy. The cape itself is rocky, and has a shoal extending a short distance off it; the depths are from 15 to 20 fathoms within 2 miles of the cape.

TIGER ISLAND, in lat. 17° 10′ N., lon. 107° 22′ E., by the observations of Captain Laplace in 1831, and about $4\frac{1}{2}$ leagues E. by N. from Cape Lay, the nearest land, is high and small, with depths of 28 to 20 fathoms in the channel between it and the coast, which is clear of danger along this part, the soundings near the land being usually from 12 to 16 fathoms, mostly blue mud, or mud and sand. Tiger Island.

CAPE BOUNG-QUIONA, in lat. 17° 57′ N., lon. 106° 34′ E., is high land, with two islands near it, and another $2\frac{1}{2}$ or 3 miles to the S.S.W., the latter having an extensive reef projecting nearly to the main land; between the former islands there is a narrow passage with 4 to 6 fathoms water, and 3 fathoms between the cape and the small isle close to its extreme point. About $2\frac{1}{2}$ leagues E. by S. from this cape, in lat. 17° 55′ N., lies the small isle, called the South Watcher, having 20 fathoms water close to its western side, decreasing to 11 fathoms near the isles contiguous to the cape. Another high island, called Sovel, surrounded by a reef, lies close to a projecting headland, 4 leagues to the N.N.W. of Cape Boung-Quiona; there is a small islet 2 miles outside of Sovel, and two hills inland about 4 leagues to the westward, called the Mamelles. About 6 or 7 leagues to the N.W. of Tiger Island the soundings are usually from 30 to 34 fathoms, and they reach from thence across the entrance of the gulf to the west part of Hainan. Cape Boung-Quiona.

THE TONKING RIVER falls into the N.W. side of the gulf: two considerable islands, amongst several others near the shore, are marks for its two principal branches. One of these branches, called Rockbo, falls into the N.W. part of the gulf in about lat. 20° 6′ N., which has been frequented by the Chinese and Siamese vessels; although there is thought to be only 12 feet water in the channel at the entrance, soft mud. Tonking River.

to force a passage *through the Paracels*, they found that it was the main land they had mistaken for those dangers; consequently, steered to the S.Eastward along the coast.

About a league westward from it, and 2 miles off shore, lies Fisher Island, of moderate height and small, which is a mark for the river.

The other branch, or principal river, called Domea, from the first considerable town on its banks, falls into the gulf about 20 leagues N. Eastward of the former, in about lat. 20° 50′ N. Between these rivers there are many dangerous shoals, projecting 2 leagues from the shore; and the whole coast of the gulf, to the peninsula of Lui-chew-fu, which bounds it on the east side, is fronted by shoals and reefs, some of them projecting a great way out from the main land.

The Bar. The bar of the principal river is composed of hard sand, liable to shift with the tides, rendering a pilot necessary when a ship intends to proceed into the river. A pilot may be got from the village Batsha, situated at the mouth of the river, by firing a gun, and making the signal. Directions. The mark to approach the river is to steer for a mountain inland, called the Elephant, bearing about N. W. by W., and when Pearl Island, which is small, and which lies on the eastern side of the road, is brought to bear about N. N. E. 1 league distant, it will be proper to anchor in 6 to 8 fathoms and wait for a pilot; the bar will then be distant 2 or 3 miles. The Formosa, July 13th, 1680, anchored in 8 fathoms, sand, Tiger's Hook N. N. E., the Alcoran N. ½ E., Pearl Island N. N. E. ½ E., and the Elephant N.W. by N., which was the best anchorage at that time. On the bar there is only about 6 feet water at low tide, when the tides rise and fall most; and 12 feet at low water, when there is little rise and fall; at high water there is in the former case 24 or 26 feet upon it, and only 14 or 16 feet in the latter case. In the entrance of Tonking River there is but one flood and ebb in twenty-four hours; and when the moon is near the equator, twice every month, there is little or no tide, being then dead neaps. With the moon's declination the tides increase, and when she is in the tropical signs they rise most; only with this difference, that when the moon has north declination, the tide flows when she is above the earth, and ebbs when she is under the horizon, making high water at setting, and low water at the rising moon; whereas, the moon having south declination, makes high water at her rising, and low water at her setting, the tide then flowing when she is under, and ebbing when she is above the horizon.

Tides. The tides are highest in the easterly monsoon, for the current which then sets along the coast of China to the westward is impelled by the strength of the wind through the channels on both sides of Hainan, producing an accumulation of water in the gulf; whereas, the N.W. and westerly winds, which greatly prevail about this gulf in the other monsoon, tend to force the water out of it to the southward.*

Inside the bar, the depths increase over a soft bottom, and the river, which is above a mile in breadth at the mouth, becomes more contracted farther up.

Cachao, the capital city of Tonking, is about 28 leagues up the river. European ships traded to this river upwards of 150 years ago, but this trade has been discontinued for a long period, and the knowledge of the navigation of this gulf, having not been carefully recorded, is now *almost* lost to Europeans; and it will probably continue so, unless trade should revive, and be an inducement for ships to return to this

* At many of the eastern islands in the Indian Seas there is only one flood and one ebb during 24 hours, which seem to depend on the moon's declination, as at Tonking, although not observed by navigators. At the Island Baseelan, near Mindanao, in March, where the Anna's long-boat went into Maloza River three times for water, we found only one flood in 24 hours, high water at the rising moon.

In Canton River, although there are two tides in 24 hours, they are influenced greatly by the moon's declination; their height at times apparently depends on that, nearly as much as on her conjunction with, or opposition to the sun.

place: the foregoing remarks for this gulf, and for the rivers, ought therefore not to be relied on implicitly.

If bound to Tonking in the South-west Monsoon, keep along the coast of Cochin-China to Cape Chouvay, or to Tiger Island; from thence, steer to the N.W. and N.N.W., giving a proper berth to the west coast of Hainan; the lead will shew the approach to it by the quick decrease in depth when near its contiguous banks, which should not be borrowed on under 16 or 20 fathoms. Having reached lat. 19° N., and in 28 or 30 fathoms, if the Island Hainan has not been seen, a N. by W. course ought to be steered to make the Norway Islands, which are of middling height: the southernmost is said to be in lat. 20° 35′ N., about 13 leagues E.S. Eastward of the Bar of Tonking River; but the course steered and the approach to the river must be governed by the tides or currents, which are frequently found to set out of the gulf.

In leaving the bar in the North-east Monsoon, steer between S.E. and S.E. by E., which will bring you in sight of Hainan, the N.W. part of which must be avoided, by not coming under 20 fathoms towards the sands, which are said to stretch out 6 or 7 leagues. Easterly winds prevail often in the gulf during the North-east Monsoon; when outside in the open sea the winds are blowing at the same time from the north-eastward.

HAINAN ISLAND, bounding the Gulf of Tonking to the eastward, extends about 55 leagues in a N.E. and S.W. direction, and is about 25 leagues in breadth. It is in most parts very high uneven land when viewed from seaward; but inland there are many level districts, cultivated with rice, sugar-cane, areka, or betel-nut trees, and tobacco. These cultivated plains are separated from each other by lofty mountains, covered with impenetrable forests, through which the natives have cut narrow passes in the most accessible parts, to enable them to go from one district to the other. The island is subject to the Chinese, who hold all the places of profit or of consequence, keeping the inoffensive aborigines in a state of abject poverty. Hainan.

The N.W. coast is little known to Europeans; some shoal banks are said to extend 6 or 7 leagues from the west part of it, which may be approached to 16 or 18 fathoms, or to 15 fathoms in some places, the soundings being regular towards them.

The south and S.E. coasts are bold to approach, with soundings generally from 25 to 35 fathoms, very near or close to the headlands, deepening to 65 or 70 fathoms about 5 leagues off; and in some places these soundings extend 6 or 7 leagues off shore.

The south coast is indented with several fine bays, affording good anchorage, and shelter from the North-east Monsoon; each of them may be considered a safe harbour during that monsoon, but they are partly open to southerly winds.

Yait-chew Bay, near the S.W. extremity of the island, in lat. 18° 24′ N., has some islets in it, and moderate depths for anchorage, but is exposed to southerly and S.W. winds; it is the westernmost bay on the south side the island. A little way up the river which falls into the bay stands the fortified town of Yait-chew, with a citadel or fort to the westward: the governor of the island frequently resides here, it being one of the chief towns. Yait-chew Bay.

Sy-chew Bay, a little to the eastward of the former, is exposed to South and West winds; a little inland there is a hill with a pagoda or funnel upon it. Sy-chew Bay.

Sama, or Samoy Bay, the next to the eastward, distant 8 or 9 leagues from Yait-chew Bay, has several islets and rocks in it, with anchorage inside of them for small vessels. A considerable river falls into the N.E. part of the bay, with a small Sama Bay.

fort at its entrance; and Sama Town, the residence of a mandarin, stands near its western bank.

Yu-lin-kan Bay.

YU-LIN-KAN BAY, in lat. 18° 10½′ N., the entrance, separated from that of Sama by a long, narrow point of land, has 22 fathoms, soft bottom, in the entrance, and from 11 to 7 fathoms at the proper anchoring place, in the N.E. arm of the bay, where ships are sheltered in every direction, except between South and W. S. W. Several ships, driven from the coast of China by ty-foongs at the beginning of the North-east Monsoon, have been known to take shelter in this bay until the monsoon was over: there is fresh water to the northward of an islet, on the eastern shore of the bay. To the northward of the anchorage there is a passage into a lagoon, or *inner harbour*, where small vessels will be sheltered from all winds. Rocky or Foul Point, forming the east side of the entrance, is surrounded by a rocky reef; but Sandy Point, on the west side, has 4 fathoms within less than a ship's length; betwixt these points, the entrance of the harbour is not above a quarter of a mile wide, and is more contracted by the reef projecting from Rocky Point. To the southward of Sandy Point, about half a mile, a reef projects a considerable way from the western shore, requiring care in steering for the entrance. A ship may warp in, if the weather is fine; or with a southerly or easterly wind she may sail in, by keeping nearest to the eastern shore until nearly abreast Rocky Point, then steer over for Sandy Point, and round it at a small distance. The best time to enter the harbour is at low water, the dangers being more conspicuous, and 5 or 5½ fathoms will be the smallest depth in the fair channel; having rounded Sandy Point, and shut it in with the land on the east side the outer bay, a ship should anchor in 5½ or 6 fathoms, within a little less than half a mile of the shore near Sandy Point, and should examine the bottom around with boats, prior to mooring.

Galong Bay.

GALONG BAY is separated from that of Yu-lin-kan by a piece of high land about 1½ leagues broad, which forms the southern extremity of Hainan, and its most prominent part is in lat. 18° 10′ N., lon. 109° 34½′ E. This bay is about 5 miles wide, and 3 or 3½ miles in depth, having two round islands, called the Brothers, in the entrance, and one near the middle of the upper part of the bay, called St. Peter, or Middle Island; in the N.W. part there are some rocks above and under water, and the bottom along the western side the bay is generally foul. With a leading wind, the bay may be entered by any of the three channels: that between the East* Brother and eastern shore has from 15 to 18 fathoms, coarse sandy bottom, and as a reef projects from the north-east end of the Brother, it is prudent to keep in mid-channel, or rather nearest to the main. The channel between the Brothers is very safe, the depths in it from 16 to 19 fathoms, blue clay; but the western channel is the most convenient with a working wind, being nearly a league wide, with soundings of 18 or 20 fathoms from the West Brother, until close to the S.W. point of the bay: inside, the depths are 15 to 11 fathoms, good anchoring ground. A little way outside the Brothers the depths increase to 35 and 40 fathoms.

Directions.

Ships wintering in this bay during the North-east Monsoon moor in 7 or 8 fathoms, dark sand and mud, at the N. E. part, with the village Galong bearing E. by S. about a mile; and a reef that lines the south side of the little bay contiguous to the village must have a berth in mooring. Here, ships are sheltered from all winds, by the circumjacent high land, except those that blow between South and South-west, which force a considerable swell into the bay. A small ship might moor *under fours*, close on

* Captain Ross made the East Brother in lat. 18° 11′ 20″ N., lon. 109° 41½′ E.

the north side of Middle Island, and be sheltered from all winds. Northward from the common anchorage there is a white sandy beach, and a rocky part of the shore separates it from the small bay to the eastward; on the N.W. side of these rocks, fresh water is procured from a small run, that terminates in a pool close to the beach. The tide rises here about 4 or 5 feet.

Pilotage. The fishermen will ask 80 or 100 dollars to carry a ship into this bay, but there is no occasion for a pilot; after entering it by either channel, work or sail up between Middle Island and the east side of the bay, which are safe to approach, and anchor opposite the village. Supplies. Small bullocks are procured at 7 or 8 dollars each; rice, sweet potatoes, and some other vegetables, may be got for dollars; also fish, and some poultry.*

Lieong-soy Bay, and adjacent coast. LIEONG-SOY, or TONG-SOY BAY, about 8 leagues north-eastward of Galong Bay, is a large open anchorage; but sheltered from north-easterly and northerly winds by anchoring well in towards the east side of the bay in 7 or 8 fathoms, with Lieong-soy high rocky point, off which a reef projects some distance, bearing to the E. S. Eastward. At the north part of the bay there is an inlet to a lagoon, near which stands Lieong-soy town, the residence of a mandarin. Ton-kieou is another considerable town farther to the westward, with a bay and some islands and rocks fronting it: a river descends from the town into the north part of this bay, and a serpentine inlet from the west side of it leads into a lake, where the country around is well cultivated, and forms a beautiful plain, separated from the land that forms Galong Bay by a chain of mountains; and it was from the summit of this chain that we had a bird's eye view of the circumjacent country.

The land to the eastward of Lieong-soy Bay is high, rocky, and barren, with 36 fathoms water within 2 or 3 miles of the shore.

Sail Rock, and the coast to the N. E. TIENG-FUNG, SKY-WIND, or SAIL ROCK, in lat. 18° 26¼′ N., and distant 3 or 4 leagues N. E. by E. from the S. E. part of the land that forms Lieong-soy Bay, is a rugged peaked rock, appearing like a Chinese junk in some views: the depths about 3 miles outside of it are 35 to 38 fathoms; and there is a channel with 10 to 13 fathoms between it and the shore, from which it is distant 4 miles. From this rock to the island Tinhosa the distance is about 10 leagues N. E. by E., and there are three islands near the shore in this space, with 12 and 14 fathoms water close to them. Inside the easternmost of these islands lies the town of Manchow, and near the coast abreast the westernmost there is a ridge of high land with three peaks on it, the centre one most pointed, and a little higher than the others: this lies near the sea, and, at a considerable distance, is sometimes mistaken for Tinhosa Island. Farther inland, in about lat. 18° 56′ N., there is a high mountain, of similar appearance to the former, but more elevated; it was seen bearing W. S.W. nearly 30 leagues distant, then forming in three peaks of sugar-loaves.

In moderate weather, sailing along the coast, bamboos may frequently be seen standing erect above the surface of the sea; they are the buoys of drift nets, which the fishermen place sometimes a great way from the land, to catch flying fish.

Tinhosa, and its harbour. TINHOSA ISLAND is in lat. 18° 40′ N., lon. 110° 29′ E., or 3° 15′ W. from the Grand Ladrone by chronometers; and in 1803 I made it 1° 4½′ E. from Cape Varela by mean of three chronometers. It is formed of two hills, extending North and South, sepa-

* Having been disabled by a ty-foong, in the Gunjavar, September 24th, 1786, we were obliged to take shelter under Hainan, and remained in Galong Bay until the 1st of April following; we walked inland at discretion, and found the natives very inoffensive. The island abounds with wood fit for fuel, but none of the timber seems durable, or proper for ship-building.

rated by a low gap, with steep cliffs fronting the sea; and from the summit of the hills the land slopes down to the eastward; it is just discernible at 11 leagues' distance from the poop.

The west side of the island being of a concave form, with soundings of 8 to 10 fathoms betwixt it and the Hainan shore, good shelter may be found against all winds, excepting those which blow from the South, or S.W.; it therefore forms a good harbour in the North-east Monsoon; the entrance to it is about 3 miles wide, betwixt the S.W. point of the island and the opposite shore. The Valentine took shelter here, after being driven from her anchors close to the Grand Ladrone, early in October, 1763, and sailed in March following for Macao. Tinhosa is steep to, on the outside; when passing it about a mile distant, we had 35 fathoms soft ground, and about 3 or 4 miles to the eastward of it, 60 and 65 fathoms.

False Tinhosa.

False Tinhosa, in about 18° 49½′ N., and 5 leagues N. N. Eastward from Tinhosa, is an island of small extent, and middling height; and when viewed from the southward has a rock like a pillar at its eastern extremity.

Coast to the northward.

From False Tinhosa, the coast extends N. by E. and N. N. E. about 10 or 11 leagues to Toongeean or Tongeon high mountain; in this extent, the land contiguous to the sea is mostly low and level, covered with trees, but far inland, the country is mountainous. The low part of the coast should not be approached under 15 fathoms in passing along, for our Chinese pilot asserted that the bottom is foul and rocky under this depth. To the northward of this low land the coast becomes again high, and safe to approach: the high land projects a little to the eastward, and from lat. 19° 43′ N. stretches northward, forming Hainan Head, the N. Eastern extremity of the island, in lat. 20° 0′ N., lon. 110° 57′ E. The northern coast from hence taking a westerly direction, an intricate channel is formed betwixt it and the peninsula of Lui-chew-fu; this channel is little known to Europeans, but the Hainan fishermen say it is not very safe for large ships, being lined by sands and breakers. The east side the peninsula of Lui-chew-fu is thought to be fronted by sands extending from the N. E. part of Hainan a great way to the northward, and projecting to seaward. This bight between the north end of Hainan and Tien-pak is very little known, but the Prince of Wales, from Port Jackson bound to Canton, fell to leeward in January, 1797, and had from 12 to 14 fathoms within 2 miles of the breakers on these shoals, with the north end of Hainan bearing from S.W. to W. by S.

Hainan Head.

North coast of Hainan.

Kiong-chew-fu, on the north side Hainan, contiguous to the channel and shoals, is a considerable town, where the Junks from China come to trade, and it is said to be a good harbour.

The Taya Islands; inside channel.

The Taya Islands, separated from the high land of Hainan Head by a safe channel 4 or 5 leagues wide, consist of two groups of high barren islands, six or seven in number, with some rocks, which may be seen about 8 leagues from the deck; the pilots say there is a safe passage 3 miles wide between the two groups. They extend N. E. by N. and S. W. by S. about 5 leagues, the northernmost being in lat. 19° 58¾′ N., lon. 111° 14′* E., or 2° 30′ West from the Grand Ladrone, by chronometers. The southernmost island, in lat. 19° 49′ N., seems one of the largest; from this a high sand-bank stretches to the N. N. Eastward, having regular soundings, 20 and 21 fathoms about 3 miles from it on the east side. When these islands bear W. by S. distant 7 leagues, the depth is 45 fathoms; when they bear N. by W. about the same distance, it is 48 fathoms; and soundings extend on the parallel of the northern-

* Capt. Ross made it in lon. 111° 16¾′ E.

most island, as far eastward as the meridian of the Grand Ladrone: the Warley had 36 fathoms in lat. 20° 25′ N., with these islands bearing South, having been driven to the westward in a ty-foong, September 24th, 1803.

The depths in the channel betwixt these islands and Hainan Head are from 10 to 17 fathoms; and there is in the western part of the channel, adjacent to Hainan, a high peaked island, called Feou-kieou.

DESCRIPTION OF THE SOUTH-EAST COAST OF HAINAN, BY CAPTAIN ROSS.*

HAINAN SOUTH POINT, in lat. 18° 9′ 35″ N., lon. 109° 34′ 30″ E., is bold, of rocky appearance, and may be seen 8 or 9 leagues in clear weather; about 8 or 9 miles South from it, the depths vary from 40 to 45 fathoms, mud and sand, gradually decreasing to 27 fathoms about 1 mile from the land. South point of Hainan.

N.W. from the South Point $1\frac{1}{4}$ miles there is another rocky point, which forms the S. E. extreme of YULINKAN BAY, and in M. Omerat's Plan is called Point de la Take, the S.W. extreme of which is $4\frac{1}{2}$ miles farther to W. by N. About a mile to the northward of the S. E. Point, and near the eastern shore of the bay, there is a small island named Zonby, and 2 miles more to the N.W. a narrow passage leads to an extensive salt-water lake. The usual anchorage for ships is in 9 or 10 fathoms, on a mud and sand bottom, about three-quarters of a mile to the N.W. of Zonby. The Discovery, in 8 fathoms, had Zonby bearing S. 40° E., the S.W. extreme of the bay nearly on with a point much nearer to us bore S. 68° W., and the lake's entrance was distant about a mile. Yulinkan Bay cannot be a safe anchorage in the South-west Monsoon, for it is exposed to the wind and swell from that quarter. A small ship may, however, proceed sufficiently far into the lake to ride with perfect security, and to repair any damage. We saw no hidden dangers in the bay, excepting the small reefs that extend a short way off the shores. A ship, to enter the lake, must keep clear of a point of the reef, extending nearly 300 yards off the western shore, about half a mile from the entrance; and when approaching the eastern point of the passage, as the rocks extend from it nearly half channel over, she must keep close to the western point, where are 5 and 6 fathoms water. The depth of water across the outer part of Yulinkan Bay varies from 15 to 12 fathoms, and decreases gradually to the shore. We did not perceive any stream of fresh water in the vicinity of the anchorage, but observed some wells in a village, which is at the back of the eastern point of the passage into the lake, and where bullocks may be obtained; it was from this point our base-line was measured. The form of the bay as represented in M. Omerat's plan is correct, but we differ from him in the size of it; and instead of the latitude of Zonby Isle being 18° 16′, I made it in 18° 11′ 15″ N. Yulinkan Bay. Fresh water.

From the south point of Hainan, $2\frac{1}{2}$ miles eastward, there is a black rocky point, or western extreme of Galong Bay, the eastern one being 5 miles farther to the eastward, situated a short way to the northward of two small islands, named the Brothers.

GALONG BAY is 3 miles deep, and there is an island about the middle of it, and several large dry rocks to the westward of the island. The usual anchorage for ships is between Middle Island and the eastern shore of the bay, in 8 fathoms water, over a sand and mud bottom. In the Discovery, we had the East Brother bearing S. 28° E., Galong Bay.

* The survey of this coast was made by Captain Daniel Ross, the Company's Marine Surveyor, on board the Company's surveying ships Discovery and Investigator, in 1817; it commenced at Galong and Yulinkan Bays, where base lines were measured on the shore; after which, a chain of triangles was carried on from the Island East Brother to False Tinhosa, and in that space, three bases were measured by sound, and every care taken to render the survey correct.

the Western one S. 4° W., and the two extremes of the bay S. 41¾° E. and S. 50° W., distant about three-quarters of a mile off the eastern shore. At this station we experienced much swell with a S. E. wind, from which it appears to be a very unpleasant anchorage during the South-west Monsoon. A small ship would find tolerable anchorage close on the north side of Middle Island, in 4 or 5 fathoms water, and be in some degree sheltered from swell; the deepest water is near the island, and the bottom muddy, but the depth decreases to 3 fathoms half-way towards the north shore of the bay, and the bottom is sandy. We did not perceive any good watering place about the anchorage; but a short distance westward of Middle Island, and a few yards from the beach, met with a large pond of fresh water, and saw many buffaloes and bullocks feeding near. We obtained plenty of firewood in a small cove near the anchorage. The depth of water outside the Brothers varies from 25 to 21 fathoms, and within them it is from 15 to 12 fathoms, decreasing gradually to 6 or 8 at the anchorage. The passage between the S. E. point of Galong Bay and the East Brother appears to be free of danger, as we did not get soundings in it, with 17 fathoms of line when in its neighbourhood, in a boat.*

Water and Supplies.

East Brother.

The East Brother is in lat. 18° 11′ 20″ North; and in April, 1810, when we visited Hainan in search of the True Briton East Indiaman, we measured with good chronometers the difference of longitude between the East point of Tien-pe-hien Harbour and the East Brother, the observations at both stations being taken on the shore with an artificial horizon; we made it 1° 33′ 30″ W., which placed the island in longitude 109° 41′ 30″ E.: at the same time, we made it 1° 28′ 10″ W. by chronometers, between the East Brother and Turon watering place; and again, in 1817, by chronometers, 39′ 40″ E. between Pulo Sapata and the East Brother.

Luengsoy Bay.

LUENGSOY, LIEONG-SOY, or LINGSOUI POINT, bearing N. 60° E. from the East Brother 23½ miles, is formed by several high hummocks, having a sandy plain to the northward; when seen at 5 or 6 leagues' distance, the point appears like an island, the most southern part of which is in lat. 18° 22′ 30″ N., lon. 110° 0′ E. The coast between Luengsoy Point and the eastern point of Galong Bay forms a considerable concavity, with several sandy beaches, and there are two small islands near the shore, in the western part of the curve or bay, one of which is in lat. 18° 16′ 30″ N., the other to the N. N. E. in 18° 19′ N., but they are too small to afford any shelter for ships between them and the shore. To the westward of the south part of Luengsoy Point 2 miles, lie several dry rocks, extending to the westward, about three-quarters of a mile from another point; and about 1½ miles farther N. by W. of this last-mentioned point there is a narrow and very shoal passage between two sandy points, which leads into an extensive salt-water lake. The Chinese have a small fort on the western point, and the number of small junks at anchor near it indicate some place of trade on or near the lake; although in 1810, upon landing at the fort, only a few fishing huts about it were observed.

There is no anchorage between Lueng-soy and Galong, where a ship could safely ride in the southerly monsoon. In the Discovery, at anchor in 17 fathoms water, the East Brother bore S. 48° 30′ W., Lueng-soy South Point N. 88° E., and the Fort N. 37° 30′ E., distant about 3 miles. The depth of water at 10 or 11 miles to the South of Lueng-soy is about 50 fathoms, gradually decreasing to 17 fathoms, after which it decreases rapidly to 9 or 10 fathoms, and then regularly towards the beaches. The dry rocks before mentioned are steep to, having 15 fathoms about half a mile from them,

* It was on the sandy beach, to the northward of Middle Island, that our base line was measured.

and the water is deep close around the whole of Lueng-soy Point, as we had from 25 to 21 fathoms about a mile off.

SAIL ROCK,* in lat. 18° 26′ 15″ N., lon. 110° 8′ E., bearing N. 56° 30′ E. from the S. E. part of Lueng-soy Point, is one of a cluster of large rocks above water, which from its being higher and whiter than the others, has acquired the name of Sail Rock; these rocks are 4 miles off the coast, and apparently bold to approach, having 32 fathoms water about 2 miles to the southward. The south point of Tinhosa Island bears N. 55° 30′ E., distant 23½ miles from the Sail Rock. Sail Rock.

In latitude 18° 34′ 35″ N., bearing N. 19° 30′ E. from the Sail Rock, distant 8¾ miles, and 1½ miles off the coast, there is an island, having two hummocks on it, named Saddle Island. Saddle Island.

A point of land, in lat. 18° 40′ N., lon. 110° 24′ 15″ E., and 3½ miles to the westward of Tinhosa Island, is the northern extremity of a considerable curve or bay, which the coast forms to the westward, between this point and Lueng-soy Point, and in which many sandy beaches may be seen, and very high land near the shores. We made the highest peak in lat. 18° 36′ 10″ N., lon. 110° 6′ 45″ E., which is about 2 miles in shore, and may be seen 12 or 14 leagues off; when it bears N. 71° W. it is over Saddle Island. Besides Saddle Island and the Sail Rock, there are two other islands on this part of the coast, one of which, called Nankin or Nanqueen, in the old charts, is in lat. 18° 38′ 20″ N., lon. 110° 20′ 45″ E.; the other is 4 miles to the westward of Nankin, and both are about 1½ miles off shore; they are too small to afford any shelter behind them from the swell, although the depth of water about them is moderate, being from 7 to 10 fathoms, and 2 miles to the southward it varies from 12 to 16 fathoms, on a sand and mud bottom. From Lueng-soy to the aforementioned point the coast affords no safe anchorage in the southerly monsoon. High Peak, and of Nankin Island.

TINHOSA ISLAND extends 2½ miles in a North and South direction, formed by two high hills, which are connected by a narrow sand, overflowed at spring tides; the southern hill is highest, and its summit is in lat. 18° 39′ 42″ N., lon. 110° 28′ 15″ E., determined by angles from the East Brother. In 1810, by chronometers, made 45′ 53″ West, difference of longitude between Tien-pe-hien Point and this hill; again, in 1817, made 59′ 8″ between the hill and Chinchow Island, on the south coast of China. The channel between Tinhosa and Hainan is about 3 miles wide, and the depth of water varies from 9 to 14 fathoms, excepting on a spit of sand, which extends about a mile from the west side of the North Hill of Tinhosa, and on which we found so little as 4½ fathoms where we anchored, with Tinhosa bearing from N. 30° E. to S. 30° 30′ E., off it about half a mile, and Nankin Island bore S. 65° W. touching the point opposite Tinhosa. The water was deeper near the island, where we had 5 fathoms. On the North of Tinhosa, the mid-channel depth is 14 fathoms, decreasing a little towards Hainan, and the shore is not so high as to the southward. The depth of water at 7 or 8 miles to the South and East of Tinhosa is about 55 fathoms, and the island appears to be quite free of danger, excepting a few rocks on the east side, close to the low sand which connects the two hills. We did not meet with fresh water on Tinhosa. Numerous amplitudes and azimuths, with two theodolites, taken on Tinhosa, made the mean variation of the needle by one theodolite 1° 31′ East, by the other 1° 32′ East, and by a large azimuth compass of Walker's 1° 38′ East, nearly corresponding with the same number of observations taken on the Brother, where it was 1° 29′ East. Tinhosa Island.

FALSE TINHOSA is a small rocky island, in lat. 18° 49′ 30″ N., lon. 110° 34′ 15″ E., which may be seen 7 or 8 leagues, and is situated about 2 miles to the N. N. E. of a False Tinhosa.

* Tien-fung of the Chinese, or sky-wind.

point on Hainan, that forms the N. E. point of the bay or concavity of the coast on the North of Tinhosa Island; and from this point, the east coast of Hainan extends more in a north and south direction, and is not so mountainous as the S. E. part. The Discovery and Investigator passed between the coast and False Tinhosa in a good channel, and anchored near the latter, in 17 fathoms water, with it bearing from S. 30° 30′ E. to S. 54° E., and the dry rocks extending to S. 78° E., distant off False Tinhosa about a quarter of a mile, and $1\frac{1}{4}$ miles off the Hainan shore.*

Toongeean Mountain.

There is a high mountain standing on a point of Hainan, which is named Toongeean by the Chinese, and may be seen 14 or 15 leagues off; and from there being no other high land in its vicinity, may be taken for an island. The point near which it stands forms the northern termination of a slight curve which the coast forms to the southward, as far as the point opposite False Tinhosa. We made the mountain in lon. 110° 59′ 20″ E., but were disappointed of an observation for latitude, and have placed it in 19° 37′ N. by carefully measuring, with both the common and patent logs, the ship's run from where it bore West, to where we anchored off the North Taya Islands, seven hours after, and got good observations for latitude. The point on which the mountain stands is in lat. 19° 35′ N., lon. 111° 2′ 20″ E., and the depth of water was from 18 to 20 fathoms about $2\frac{1}{2}$ miles off it, on a foul bottom, and 38 and 40 fathoms 4 or 5 leagues off.

Toongeean Point.

May 15th, at noon, we were in 21 fathoms water, with the South Taya Island bearing East, distant 7 or 8 miles; the largest island of the southern group bore N. 79 E., and the North Taya Island bore N. 61 E.; we were about 6 or 7 miles off the Hainan shore, which, to the northward of Toongeean point, is very low and sandy, without cultivation. We made $10\frac{1}{2}$ miles of northing and $10\frac{1}{2}$ miles of easting to our anchorage off the North Taya Island, where we observed in lat. 19° 59′ 30″ N., and by chronometers were 47′ 52″ East of Tinhosa Hill, and 12′ 17″ West of Chinchow Island, on the coast of China, which placed the ship in 111° 16′ 5″ E. The North Taya Island bore S. 35° 12′ E., distant 1 mile; another smaller one near it S. 3° 30′ E.; and the southern island of the north group bore S. 5° 55′ W. The South Taya Island bore S. 19° 22′ W., distant 10 or 11 miles; the largest island of the southern group bore S. 13° 15′ W., and the western island bore S. 35° 25′ W. 6 or 7 miles. The high mountain of Toongeean bore S. 33° 28′ W., and a very distant hummock in shore on Hainan bore S. 33° 30′ W. Between the North Taya Island and the next one to it there is a rock, over which the sea just washes.

Taya Islands.

The TAYA ISLANDS form two groups, with a passage 4 or 5 miles wide between them, and they may be seen 4 or 5 leagues. We found from 21 to 29 fathoms water to the westward of them, 35 fathoms about 4 or 5 miles to the South, and the same depth about a mile to the North of them. The North Taya Island is in lat. 19° 58′ 45″ N., lon. 111° 16′ 45″ E.; the South Taya Island is in lat. 19° 48′ N., lon. 111° 12′ 15″ E. The North Island bears from the Grand Ladrone S. 46° 30′ W., distant 174 miles.†

* When hereabouts, the weather became very unsettled, and put a stop to our making more particular observations on the coast, obliging us to stand off and on three or four days, when we proceeded to the Taya Islands, and thence in search of the shoal in the Bashee Channel. But from my observations when we were near the shore, and from the information of a good Chinese pilot we had on board the Antelope in 1810, it appears that the East coast of Hainan does not furnish any place of safety for a ship to anchor in, and the bottom was in many places mixed with coral rock. The land is better cultivated than to the southward, and from the number of coco-nut trees, I conclude it is from this part of Hainan that the Chinese procure the coir, of which they make the ropes; it is blacker than the Indian coir, and not so durable.

† In the few communications we had with the people on Hainan, they were found to be civil, and ready enough to part with refreshments when the Mandarins were not present; but whenever the latter appeared,

THE PARACELS, WITH THE BANKS AND DANGERS IN THE NORTHERN PART OF THE CHINA SEA.

PARACELS.

THE PARACELS were formerly delineated as a *continued large bank*, interspersed with groups of large and small islands, extending North and South from lat. 12° to about $16\frac{1}{2}$° or 17° N., with the nearest part of it within 15 to 20 leagues of the coast of Cochin-China. Other shoals and islands, called Amphitrite, Lincoln, &c., were placed nearly 3° farther to the eastward, with a wide space between them and the former bank; it is now certain, however, that all these dangers form only *one* archipelago, consisting of shoals and low isles not far separated. This will be seen by the following description of them, taken from the survey made by Captains Ross and Maughan, of the Bombay Marine. General description of the Paracels.

THE NORTH SHOAL, extending E. by N. and W. by S. about 2 leagues, is narrow and steep to, having soundings only on the north side, 14 fathoms within half a cable's length of the rocks: the east end of this shoal or reef is in lat. 17° 6′ N., lon. 111° $32\frac{1}{2}$′ E., and it appears to be the N. Westernmost danger of the Paracels. North Shoal.

THE AMPHITRITE ISLANDS are in two groups, lying N. N. W. and S. S. E. of each other, and having a deep water channel between them. The northern group consists of five low narrow islands, connected by a reef of rocks that projects 2 or 3 miles beyond their extremes; upon the westernmost island there is a coco-nut tree, from which it has received the name of Tree Island. The western extremity of this danger is in lat. 16° 59′ N., lon. 112° 12′ E., and it extends about 4 leagues E. S. E., the eastern extremity being in lat. 16° 54′ N., lon. 112° 23′ E.; and it forms the northern limit of danger in this part of the Archipelago. Amphitrite Islands.

There are no soundings on the north side, but good anchorage in 10 fathoms, sand, is got under the S. E. side of the chain, about half a mile from the rocks: no fresh water is procurable.

The southern group consists of two islands, called Woody and Rocky Islands, lying very near each other.

WOODY ISLAND, in lat. 16° 50′ N., lon. 112° 18′ E., is about 3 miles in circum- Woody Island.

they proved as arbitrary and rapacious as we found them on the coast of China. From what I observed, I am inclined to believe that a number of bullocks may be obtained on Hainan, as they appeared to be plentiful, although small. There are numerous fishing boats belonging to the island, built of a hard and heavy wood, instead of the fir which the Chinese boats are built with, and they sail fast; many of them go every year on fishing voyages for two months, and navigate to seven or eight hundred miles from home, to collect the bicho de mer, and procure dried turtle and sharks' fins, which they find amongst the numerous shoals and sand-banks in the south-east part of the China Sea. Their voyages commence in March, when they visit the Northern Banks, and leaving one or two of their crew and a few jars of fresh water, the boats proceed to some of the large shoals nearly in the vicinity of Borneo, and continue to fish until the early part of June, when they return and pick up their small parties and their collections. We met with many of these fishing boats when we were about the shoals in the China Sea.

ference, covered with small trees, and has a spring of very good water on its western side, near some coco-nut trees. A reef projects around this island to the distance of three-quarters of a mile, connected with Rocky Island.

Rocky Islands. ROCKY ISLAND, in lat. 16° 52′ N., lon. 112° 20′ E., is small, and nearly of the same height as Woody Island; there are no soundings to the N. E. or eastward of it, but irregular soundings extend 6 miles to the S. Westward of these islands, decreasing to 14 fathoms in some places. Close to the reef on the west side of Woody Island there are 25 fathoms; and the depths decrease gradually from 30 to 15 fathoms towards the Amphitrite, where a vessel may anchor if requisite.

Lincoln Island. LINCOLN ISLAND, in lat. 16° 40′ N., lon. 112° 42′ E., is about 3 miles in circuit, surrounded by a reef to the distance of a mile; it is low, covered with small brush-wood, and has a spring of excellent water near three coco-nut trees in its centre. There are 20 fathoms close to the rocks at the south and west sides, and the soundings appear to extend about 2 miles off, but the water is deep on the east side. This is the easternmost island of the Paracels.

Pyramid Rock. PYRAMID ROCK, in lat. 16° 36′ N., lon. 112° 37′ E., about 6 miles to the S.W. of Lincoln Island, has no soundings close to; but the pilot said that soundings were continued in a narrow line, from the south part of Lincoln Island to the shoal seen by the ship Bombay Merchant in 1800.

Bombay Shoal. BOMBAY SHOAL, in lat. 16° 0′ to 16° 6′ N., lon. 112° 26′ to 112° 38′ E., by lunar observations and chronometers, is a reef of breakers of oblong form, about 4 leagues in extent E. by N. and W. by S., having apparently an entrance at the west part, with deep water inside; some of the rocks are level with the water, and have sandy patches on the inside of them. This shoal is steep to, for at three-quarters of a mile off the south side, the Bombay had no ground with 100 fathoms line; and close around it, Captain Ross in his survey got no ground. It seems to bear about South from Pyramid Rock, for although the Bombay, by chronometer, made it several miles more easterly than the longitude stated above from the *survey* of Captain Ross, it probably is not so; because the Jehangire observed at noon, October 25th, 1806, in lat. 16° 5′ N., lon. 112° 52′ E., by good chronometer, and no danger could be discerned from the mast-head. On the following day this ship got upon a CORAL BANK, in lat. 16° 18′ N., lon. 112° 35′ E., and had 12, 10, and 9½ fathoms; next cast 30, and in less than an hour had no ground, drifting to the S. Eastward by the lead, being calm at the time. This seems to agree with the account of the pilot mentioned above, that there are soundings on *coral banks* in a line between Lincoln Island and the Bombay Shoal, which, with those dangers, form the eastern boundary of the Paracels.

Jehanghire Bank.

Crescent Chain. THE CRESCENT CHAIN of islands and reefs, called by Captain Ross, Money, Robert, Pattle, Drummond, and Governor Duncan Islands, extends from lat. 16° 27′ to 16° 32′ N., and from lon. 111° 29′ to 111° 44′ E. They consist of six low sandy islands, connected by reefs, stretching nearly East and West in the form of a crescent; at the east end of which, an elbow is formed, by part of the reef turning round to the S. Westward; on this part stand the Governor Duncan Islands, two in number, with an opening of 4 miles wide, betwixt their contiguous reef and that projecting round Money Island, which forms the western extreme. This opening is on the south side of the chain, and inside there are soundings; but the ground is chiefly

coral, with great overfalls from 25 to 5 fathoms. The best anchorage is close to the reef, on the north side of the Governor Duncan Islands, where there were some broad patches of sandy bottom. Betwixt the Governor Duncan Islands and Drummond Island, which lies next them to the eastward, there is a narrow passage with soundings of 14 and 12 fathoms; but it ought not to be attempted in a large vessel. On the south sides of these three islands no soundings are obtained.

OBSERVATION BANK, in lat. 16° 35′ N., lon. 111° 40½′ E., is small, and lies on the north side of the Crescent Chain last mentioned, and may be considered as part of it. Observation Bank.

THE DISCOVERY SHOAL, or REEF, extends from the west end, in lat. 16° 11′ N., lon. 111° 32½′ E., about E. by N. 5¼ leagues, its eastern extremity being in lat. 16° 16′ N., lon. 111° 46½′ E. This long and dangerous reef is of the shape of an extended oval, with an opening of one cable's length on its south side, having in it overfalls from 2 to 20 fathoms, and a small opening on the north side. There are no soundings about 20 yards from the reef, and scarcely 2 fathoms water over any part of it, with many spiral rocks a few feet above the water's edge. The Hainan boats come here to fish, from January to May. Discovery Shoal.

VULADOR SHOAL, extending E. by N. and W. by S. 7 miles, has a few small spiral rocks above water, with high breakers, and no soundings at the distance of a cable's length on either side. Captain Ross, in his survey, makes the centre of this shoal in lat. 16° 18′ N., lon. 112° 2′ E.; the Portuguese Snow Vulador, in her passage from Macao to Manila, saw it, July 21st, 1807, and by chronometer made it in lat. 16° 19′ N., lon. 112° 5′ E., bearing S. 15° W. from Amphitrite Islands, distant 39 miles. She had passed to the westward of these islands on the preceding day, and in steering to the southward had no soundings, nor did she see any other shoal but that which has been named after her. Vulador Shoal.

PASSOO KEAH, in lat. 16° 2′ N., lon. 111° 45′ E., is a small sandy island to the southward of Discovery Shoal, surrounded by a coral reef, having no soundings near it. Passoo Keah.

TRITON ISLAND, or BANK, in lat. 15° 46′ N., lon. 111° 11′ E., by chronometers, extends in a N.W. and S. E. direction about 3 or 4 miles, according to a plan of it sent to me by Captain Brown, of the Triton; the north part is a sandy lump, about 20 feet high, sloping down in a low point to the S. Eastward, with high breakers projecting a great way in that direction; another reef projects from its N.W. end, and, like the preceding dangers, there are no soundings near it. Triton Island.

This is thought to be the southernmost and westernmost danger of the Paracels; it bears from Pulo Canton, which is the nearest land of Cochin-China, E. by N., distant 122 miles.

In June, 1815, Captain Maughan, in the Investigator, passed within a quarter of a mile of apparently some PATCHES OF CORAL, having, he supposed, about 6 or 8 fathoms water over them; but no soundings could be got with 110 fathoms line at that distance, and a boat could not be hoisted out to examine them, on account of the high sea and blowing weather. These patches, seen at 2 P.M., are situated in lat. 14° 12′ N., and in lon. 112° 52′ E; but it is uncertain that they were real dangers. Coral patches lately discovered.

Tides and currents.

At the Crescent Chain, and at some other of the Paracel Reefs, there are regular tides during the springs; the currents run generally strong before the wind in both monsoons, but in light winds between the monsoons they are continually changing their direction amongst the shoals; ships ought, therefore, never to come within the limits of these dangers, if it can possibly be prevented, for they may be drifted upon some of the reefs during calms, close to which there is no anchorage. There are several channels betwixt the different reefs or shoals, from 4 or 5 to 10 and 12 leagues wide.

BANKS AND DANGERS.

Macclesfield Bank.

THE MACCLESFIELD BANK, discovered by the English ship of this name, in 1701, is of greater extent than generally supposed, for the Fort St. David country ship is said to have obtained soundings in lat. 15° 17′ N. on its southern part; and in lat. 16° 19′ N. by noon observation, the Stormont had 41 fathoms on its northern part, and about 1 mile farther to the southward she had 14 fathoms water. The Cirencester had soundings in lat. 16° 21′ N. on its north end; the bank, therefore, appears to extend from lat. 15° 17′ to 16° 21′ N.: its length East and West is about 70 miles, the western edge being nearly on the meridian of the Grand Ladrone, and its eastern edge about 1° 10′ E. of that meridian, by chronometers. The depths on this bank are generally very irregular, from 25 or 30 to 45 or 50 fathoms, coral rock; and in some places, where the soundings are a little regular, the bottom is coarse or fine sand. There appear to be gaps in some parts of the bank where no ground is obtained with 80 or 100 fathoms line; for several ships in steering directly over it, after getting ground, have lost soundings for a considerable time, and obtained them again. The Carron, in lat. 15° 27′ N., and 30 miles East of the Grand Ladrone, by chronometers, had 13 fathoms, coral rock, and in ten minutes after no ground with 60 fathoms of line, steering N. N. E. and North; after running 10 miles, she got ground 14 and 16 fathoms, and carried soundings of 35 to 44 fathoms, steering North 8 miles, and again lost ground; continued steering a north course 14 miles, and had no ground with 45 fathoms of line, until in lat. 16° 0′ N.; she then carried soundings of 38 and 44 fathoms, steering 4 miles on the same course.

On the northern and eastern parts of the bank there are level patches of considerable dimensions, with regular soundings from 9 to 15 fathoms, sandy bottom; there are also some patches on the southern and western parts, with 14 to 17 fathoms upon them. In lat. 15° 40′ N., on the meridian of the Grand Ladrone by chronometers, the Gunjavar had 13 and 14 fathoms water: in lat. 16° 10′ N., and 32 miles East of the Grand Ladrone by chronometers, she had 10 fathoms, coral: in lat. 15° 30′ N., and 26 miles East of the Grand Ladrone by chronometers, she had 12½ fathoms; and in lat. 16° 5′ N., and 28 miles East of the Grand Ladrone by chronometers, she had 10 fathoms, coral rock. The Castlereagh, in lat. 15° 58′ N., and 7 miles East of the Grand Ladrone by chronometers, had 14 fathoms; and in lat. 15° 43′ N., and 3 miles East of the Grand Ladrone, she had 40 and 43 fathoms, all coral rock.

The greatest extent of the bank, East and West, appears to be near its northern extremity, for Captain Fraser had soundings 1° 8′ E. of the Grand Ladrone by chronometer. In lat. 15° 56′ N. and 1° 8′ E. of the Grand Ladrone, by chronometer, the Thetis had 11½ fathoms, and carried soundings 3 or 4 miles farther to the eastward, deepening to 20, 40, 60, and 75; then 80 fathoms, no ground, when 1° 12′ E. of the Grand Ladrone.

The shoalest water seems to be on the northern extremity of the bank; for in lat.

16° 19′ N., and 50 miles East from the Grand Ladrone by chronometers, corresponding with lunar observations, the Cirencester had a quarter less 10 fathoms, deepening gradually until in lat. 16° $21\frac{1}{2}$′ N., then 55 fathoms, no ground.

The American ship Devotion had $8\frac{1}{4}$ fathoms in lat. 16° 9′ N.; and the Milford had regular soundings of $8\frac{1}{2}$ to 9 fathoms near an hour, steering to the N. Westward over the N. E. part of the bank.

It has been said, there are 5 or 6 fathoms water on some parts of the Macclesfield Bank; but the least water found on it, by *indisputable* information, appears to be 8 fathoms; and there probably may be rather less, on some small patches of the coral ridges. Although this bank seems free from danger *at present*, yet, by the progressive vegetation, and consolidation of the coral into rock, the shoalest patches may, *in course of time*, become so much elevated as to render them dangerous for large ships to pass over when the sea runs high.

Between the Macclesfield Bank and the eastern limit of the Paracels it has been said there are other coral banks, with soundings of various depths upon them; yet, in the space of about 16 leagues, comprehended between the western edge of the Macclesfield Bank and the Bombay Shoal, or N. Eastern limit of the Paracels, probably no soundings are to be obtained.

Scarborough Shoal.

SCARBOROUGH SHOAL, or MAROONA, on which the Scarborough struck in the night, September 12th, 1748, is a dangerous reef of rocks, little more than mid-way from the Macclesfield Bank, towards the coast of Luconia. From the north end to the middle of the shoal, it is about $9\frac{1}{2}$ miles in extent East and West, decreasing to a point at the south end, steep to on all sides, having no soundings close to the rocks, of which only a few are seen above water, scattered over different parts of the shoal. A frigate, sent by the Spanish admiral from Manila, surveyed it in April, 1800, and found it extend $8\frac{3}{4}$ miles North and South, or from lat. 15° 4′ to 15° $12\frac{3}{4}$′ N.; the eastern part 3° $6\frac{3}{4}$′ West, and the western part 3° $16\frac{1}{4}$′ West from Manila, by chronometers; and the nearest part distant 131 nautical miles from Point Capones. This makes the centre of the shoal in lon. 117° $48\frac{1}{2}$′ E., Point Capones being in lon. 120° 3′ E. Captain T. Robertson, in the Cirencester, passed close to this shoal October 20th, in the same year, and made it 8° 47′ E. of Pulo Sapata, by chronometers, or in lon. 117° $49\frac{1}{2}$′ East.

St. Esprit Shoal.

ST. ESPRIT SHOAL, is imperfectly known in respect to its extent, and whether it is really dangerous or not has not yet been ascertained. M. D'Apres places the centre of it in lat. 19° 33′ N., and 55 miles West from the Grand Ladrone *by account*; it is 6 leagues in diameter, with 9 to 15 fathoms on its southern part, and on the northern part there are rocks even with the water's edge. Mr. Dalrymple, on the authority of the Asseviedo's account, has placed its centre in lat. 19° 6′ N., and 39 miles West of the Grand Ladrone; this vessel discovered it on her passage from Macao to Manila, May 17th, 1755. The Grosvenor sailed 2 miles on it in 1765; she got upon its eastern part, had $6\frac{3}{4}$ fathoms, and saw several spots, with *apparently* less water; this ship's position of the shoal and that assigned to it by the Asseviedo, agree with each other. A French ship had 8 fathoms on it in 1763; she agrees with the ships mentioned, in respect to its latitude, but states the bank to be small. The Milford, in 1789, got upon its eastern part; perceiving the rocks alongside, sounded, had several casts of 8 fathoms, and suddenly got out of soundings by hauling to the eastward; she steered N. by E., and made the Grand Ladrone bearing about N. E. by N.

Captain Ross, in the Discovery, June 24th, 1813, steering eastward, got from 25

fathoms no ground, into 15 fathoms, coral, and having run about a mile, lost soundings. Steered back to the westward, and at 11 hours 55 minutes A.M. again got on the bank, and ran 3 miles across it; least water found was 10 fathoms. At noon, when in this depth, observed the lat. 19° 30′ 10″ N., lon. 113° 6′ E., or 38 miles West from the Grand Ladrone by chronometers, in a run of 48 hours to that island.

Position, by Captain Ross.

This officer is of opinion, that the bank is of small extent, that the report of dry rocks on it is erroneous, as the swell at this time was high, and would have produced breakers on any very shoal parts; whereas, no discoloured water was visible till in 10 fathoms, although the day was clear. But strong ripplings broke on board the ship when in the vicinity of the bank, which might be mistaken for breakers by persons unacquainted.

The true situation of the St. Esprit Bank here given by Captain Ross agrees nearly in latitude with D'Apres' account, but differs 24 miles from that of the Asseviedo and Grosvenor, which gives some reason to apprehend that two banks, detached from each other, *may possibly* exist hereabout. The Althea, in 1806, passed close to discoloured water in lat. 19° 36′ N., lon. 112° 17′ E., or 1° 48′ East of Tinhosa; she hauled off from it, but got no soundings in passing.

Pratas Shoal.

PRATAS SHOAL is of circular form, flattened on each side, with four obtuse points: it is composed of coral rock, level with the water's edge in many places; in other parts there are from 2 to 8 feet water over the rocks. On the N.W. part, about 2 or 3 miles inside the edge of the reef, lies a low island of considerable size, and formed of white coral, covered with coarse grass and shrubs; it may be seen 3½ leagues from a large ship's deck; it is visible when near the southern extremity of the shoal, but more conspicuous in approaching it from the west or northward.

The south part of the shoal is a continued range of breakers, steep to, extending W. N.W. and E. S. E.; the western side stretches N. N.W. and S. S. E., and although the water appears very shoal on this part, the sea does not always break; the eastern side does not break when the sea is smooth, for the Eugenia, October 22nd, 1805, was within 3 or 4 miles of this side at noon before the shoal was discerned.* When the sea runs high, it appears, that breakers are seen mostly all round the exterior parts of the shoal: but inside, the water is smooth, of a green colour, and seems pretty deep in some places. Although it is steep to in most parts, there appear to be several spots where a ship might find anchorage outside the breakers, in a case of necessity, particularly on the west side; but the best anchorage is to the north-westward of the island, where soundings project 2 or 3 miles from the edge of the shoal.

Position

Several navigators, by good chronometers, agree nearly in making the south end of the shoal in lat. 20° 36½′ N., north end in lat. 20° 52′ N.; east side in lon. 116° 52′ E., west side in lon. 116° 41′ E.; and the body of the island in lat. 20° 44′ N., lon. 116° 42′ E.

By good chronometers, Captain Mackintosh made Pratas Island 1° 40½′ E. of Pedra Branca, 2° 26½′ E. of the east end of Great Lema, and 2° 54′ East of the Grand Ladrone.

Captain Ross, in the Discovery, with the Investigator in company, visited this shoal, August 28th, 1813: the first soundings got were 74 fathoms, fine coral, about 1½ or 2 miles off the N. E. point, and a little beyond that distance no ground. From hence, steered along the north side, about three-quarters of a mile off the breakers, in

* The Frederic Adolphus, Swedish ship, was lost on the east side, September 4th, 1761 with the island bearing W. N. W., and several other ships have been wrecked on this dangerous shoal.

soundings from 31 to 38 fathoms; the Investigator, keeping about a quarter of a mile off, had great overfalls from 10 to 24 fathoms. After rounding the N.W. point about 1 mile off, in 35 fathoms, rocky bottom, they anchored on the west side in 24 fathoms, with the island bearing from S. 39½° E. to S. 65½° E., off its west end about 1½ miles; N.W. point of the shoal N. N. E., distant 2 miles; and about half-way between the ship and the shore, had 4 and 5 fathoms, then very shoal water.

On landing, there was found to be a deep inlet or harbour for boats on the west side of the island, which must afford shelter to the Chinese fishermen, who come here to fish in the early part of the year; and upon the island was erected a Chinese temple, by pieces of wreck, apparently that of a junk.

By observations taken on the island, Captain Ross made it in lat. 20° 42′ 55″ N., lon. 116° 44¾′ E. North-east point of the shoal in lat. 20° 47′ N., lon. 116° 53¾′ E.; North-west point in lat. 20° 45′ N., lon. 116° 42¼′ E.; and the ship's anchorage on the western extreme in lat. 20° 43′ N., lon. 116° 41¾′ E.; which situations were fixed by three good chronometers. Position by Captain Ross.

Pratas Island was found to bear from Pedra Branca S. 42¾ E. (*true*), distant 130½ miles; and from the north end of Great Lema S. 59° E., distant 157 miles.

The shoals which have been described in this section are the only dangers in the *northern* part of the China Sea, which lie at a considerable distance from land.

SOUTH COAST OF CHINA, TO THE WESTWARD OF CANTON RIVER.*

NOW-CHOW, in lat. 20° 58′ N., lon. 110° 26′ E., bearing S.W. by W. ½ W., about 17 leagues from Tien-pak, and lying in the north-eastern part of the peninsula of Luichew-fu, is a small port dangerous to enter, but when in it there is good shelter. This place was a rendezvous of the Ladrones, whose vessels anchored in great numbers alongside the forts and town, their crews being part of the inhabitants. The Maria, a Portuguese ship, went into this place for water, and was captured by the Ladrones; ships ought not to go into the harbour if not well armed. Now-chow.

OU-CHEUN, situated near a remarkable high bluff rocky mountain projecting from the main, considerably to the westward of Tien-pak, is a town, with a channel leading to it; where is said to be a harbour, with water on the bar sufficient for a small ship. Ou-cheun.

The high bluff mountain bears from Sey-ho Point W. ½ S., and the coast to the westward of this mountain is low and sandy, scarcely visible from the mast-head in 10 fathoms water.

TIEN-PAK, or TIEN-PE-HIEN, is the principal place on the south coast of China, where salt is produced, and several hundred junks are employed transporting it to Canton. Tien-pak.

The high land on the N.E. side the road, called Lintoa, has the appearance of a

* Chiefly from the surveys of Captains Ross and Maughan.

high, round mountain, in coming from the eastward ; it is separated from the other high land to the eastward by an isthmus of white sand, and its southern extreme is called Sey-ho Point. From this point E. by S. $1\frac{3}{4}$ miles, and 1 mile distant from the high land, lies a reef of rocks, on which the sea often breaks, having 11 fathoms close to, on the south side, with 7 fathoms regular soundings between it and the shore. From Sey-ho Point, S.W. about half a mile, lies Pauk-pyah, a large white rock, having between it and the point 6 and 7 fathoms water. Foong-ky-chy, a small island, lies about $1\frac{3}{4}$ miles to the westward of Pauk-pyah. Ty-foong-kyoh, about $2\frac{1}{4}$ miles to the S. Westward of the latter, is of considerable height, being the outermost island of the road, in lat. 12° $22\frac{1}{2}'$ N., lon. 111° 13′ E., or 2° 31′ W. from the Grand Ladrone by chronometer.

Directions for sailing into the road. A small ship, in want of shelter from a N.E. or East gale, may keep near the reef of rocks to the eastward of Sey-ho Point, then between the point and Pauk-pyah, and anchor in 4 fathoms, sand and mud, about three-quarters of a mile westward of the point, with Pauk-pyah bearing S. $\frac{1}{2}$ E., and a pagoda on the high land near Sey-ho Point N. E. by E. $\frac{1}{2}$ E. She must not go farther to the northward, for the bay is very shoal in that direction, with a rock in it above water.

Large ships ought to pass about a mile to the southward of Pauk-pyah and Foong-ky-chy, in 7 or 8 fathoms water, and anchor in 6 fathoms between the latter and Ty-foong-kyoh, or rather a little inside this island, which will shelter them from S.W. winds; and Foong-ky-chy and Sey-ho Point will break the force of the N. E. and East winds. From the N.W. side of Ty-foong-kyoh projects a shoal bank, with only $2\frac{1}{4}$ fathoms; but directly inside its north point there are 6 and $6\frac{1}{2}$ fathoms, soft bottom.

Tien-pak Harbour being small, and the bar being about a mile to the N. N. E. of Foong-ky-chy, having only $3\frac{1}{2}$ fathoms on it at high water, ships ought not to go into it, unless they are in want of immediate repairs. When at anchor in the road, the coast from Sey-ho Point to the remarkable bluff distant hill to the westward appears as one deep bay with a sandy beach, having high back land, and the entrance of the harbour is not easily discerned.

If a ship intend to go in, she should anchor in $4\frac{1}{2}$ fathoms, mud, between the north side of Foong-ky-chy and the bar, to be ready to cross over at high water. To approach this anchorage, coming from Sey-ho Point, or from Pauk-pyah, *two sunken rocks* must be avoided ; these lie between the latter and Foong-ky-chy, with 5 fathoms water close to them : they bear from Pauk-pyah W. $\frac{3}{4}$ N., and from Sey-ho Point W. by S. $\frac{1}{4}$ S. ; it is, therefore, advisable to keep the highest part of this point bearing East, in passing to the anchorage at the bar. (Sunken Rocks.)

On the N.W. end of Foong-ky-chy there is a small sharp hummock, which having been brought to bear S. S.W., a vessel may steer on the opposite point towards the bar, and will shoal gradually. The best guide, after getting over it a little way, is, for a person at the mast-head, to direct the course up channel between the two dry sands ; or, if covered, to keep a boat on each side. The channel is not more than half a mile wide, and in it the depth increases from the bar to 7 fathoms, mud, close to a low point of sand that forms the S. E. side of the harbour ; and here a vessel is sheltered from all winds : this point is distant 2 miles from the bar, and bears from the small brow of Foong-ky-chy N.N.E. $\frac{1}{2}$ E.

The channel decreases in depth to $2\frac{1}{2}$ fathoms, where the salt junks lie close to the salt pans, about $2\frac{1}{2}$ miles to the northward of the low sandy point, on which stands the village, protected by small forts on each side the harbour.

To the north-westward of the bar about $1\frac{3}{4}$ miles lies Marble Rock, and near 4 miles more westward there is a reef of black rocks; neither of these can be approached, the water being very shoal on that side the bar. The tide rises $8\frac{1}{2}$ feet on the bar at full and change of moon; high water at 12 hours. After the 1st of September there is almost a constant westerly current along this coast, running from half to $1\frac{1}{2}$ miles per hour. TIENPAK CITY is walled round, and is of considerable extent; it lies at the bottom of the shoal bay on the N. E. side the harbour, and can only be approached in boats at high water, through creeks that intersect the extensive flat situated between it and the anchorage. A ship touching here in distress may procure temporary masts, and get iron-work done in the city; refreshments of all kinds may be got from the villages contiguous to the harbour. Some water may be obtained on the Island Ty-foong-kyoh, at a small spring near the shore; but the Chinese boats will bring it from the city at a very moderate rate. It is prudent to send an officer to wait on the chief mandarin, stating the supplies wanted, and a small present to him may be useful. The Warley anchored off this place September 27th, 1803, after being disabled in a ty-foong, and got from the mandarin a pilot and thirty Chinese, to assist in working the ship to Macao; she worked close along the coast, and was from October 5th to November 4th getting from Tien-pak to Macao.

Tides.

Tienpak City.

TY-CHOOK-CHOW, an island in lat. 21° 26′ N., about E. by N. from Sey-ho Point, and one league distant from the coast, has rocks on the north side, stretching to the N.W. and towards the coast; but there is anchorage on the west side this island, in 6 fathoms, fine sand, about three-quarters of a mile off shore, where a ship will be sheltered from easterly winds: the soundings are 7 and 8 fathoms betwixt it and the reef to the eastward of Sey-ho Point.

Ty-chook-chow.

CHIN-CHOW, bearing N. E. by E. $\frac{1}{2}$ E. from Ty-chook-chow, distant $5\frac{1}{2}$ miles, is high, and covered with grass; it should not be approached on the south side nearer than $1\frac{1}{2}$ or 2 miles, in 10 or 11 fathoms, for a reef of rocks projects S. $\frac{1}{2}$ E. from it about three-quarters of a mile, on which the sea generally breaks: close to the island on the east side there are 8 fathoms, foul ground; to the westward, between it and Ty-chook-chow, there are 7 and 8 fathoms, gravelly bottom. The coast between these islands forms a deep bay with shoal water, having on the east side a fort, and an inlet for boats, called Yue-tong, or Fish Pass.

Chin-chow.

SONG-YUE POINT, in lat. 21° 31′ N., lon. 111° $40\frac{1}{2}$′ E., bearing from Chin-chow E. by N. $\frac{1}{2}$ N. about 10 miles, is the S. Western extremity of the Great Bay, at the N. E. part of which Hai-ling Harbour is situated; close to it there are 9 or 10 fathoms water. Approaching it from eastward three little hummocks appear near the point, with a long sandy beach between them and the high land: the bay on the west side is shoal, and Song-yue Town stands at its N. Eastern angle. The Brothers, distant 3 miles N. N. E. from Song-yue Point, are two islets near the high land, having rocks projecting from them about half a mile; but about a mile to the eastward of them there are 8 fathoms water.

Song-yue.

HAI-LING-SHAN,* or Huiling-san, is a high island, extending E. N. E. and W. S. W. about 4 leagues, separated from the coast on the north side by a narrow pas-

Hai-ling-shan.

* Hai is literally sea; and Shan, a high island or mountain, in the Chinese language.

sage, and having an extensive shoal bay to N. Eastward, and the harbour is on the west side. Two small islands, sometimes called the Twins, and by the Chinese, Mamee-chow,* bear from Song-yue Point E. by N. ¾ N., distant 10 miles; they are in lat. 21° 34′ N., lon. 111° 50′ E., and lie close to the S. W. point of Hai-ling-shan, being united to it by a reef and sand-bank. They form the outer point of Hai-ling Harbour, and in coming from the eastward, being on with each other, appear as a single island.

Directions for sailing into the harbour.

To sail into the harbour, if coming from eastward, pass about a quarter of a mile on the south side Mamee-chow in 8 fathoms water, and round them about the distance of a cable's length in 7 fathoms. On the brow of the western islet there is a remarkable stone, and N. ¾ W. from it about half a mile lies a sand-bank, having only 2¼ fathoms on it at low water spring tides. From the same stone, Deep-water Point, the next prominent point to the northward, bears N. N. E., distant rather more than half a mile, and the space between it and Mamee-chow is dry at low water. Having rounded the western Mamee-chow, steer direct for Deep-water Point, which pass at rather less distance than a cable's length, for the edge of the 2¼ fathoms bank is within 2½ cables' lengths of it.

From Mamee-chow the depths are 7 and 8 fathoms, until they increase suddenly to 9 and 10 fathoms near Deep-water Point. From this point N. N. E. ¾ E., about a mile, there is a small hill covered with trees, and a fort on its summit, not easily discerned: steer from Deep-water Point direct for the fort, until abreast of Teep-chow, a small island about mid-way between them. After passing the point, the depth will suddenly decrease to 6, then to 5 fathoms near Teep-chow, to the westward of which, about a quarter of a mile distant, large ships should anchor with the fort bearing N.E. by N. The anchorage is rather confined for more than two large ships; and although this harbour is safe, it should only be resorted to by ships of large size, in a case of necessity.

The bay between Teep-chow and Deep-water Point has only 2½ fathoms water; here, adjacent to a small joss house in ruins, fresh water may be procured.

The harbour for small vessels is in the bay formed between Teep-chow and the fort, where the depths are 8 and 9 feet; the village Chino stands in this bay, where water and refreshments are obtained; carpenters and caulkers may be got to work on board, and smith's work can be executed at the village.

About half a mile westward from Teep-chow the water is shoal over a sandy bottom; and deepens again in a narrow gap, to the westward of which there are breakers about 1¼ miles from the fort. There is a small peaked islet about 2 miles N. by E. from the fort, and between them some rocks, dry at low water; a ship should not pass the fort, the water to the northward being shoal.

The 2¼ fathoms bank is small and steep to the east side; it bears S.W. from the fort, and from Deep-water Point W. ¾ S. On the N.W. extreme of Hai-ling-shan there is a small peaked hill, bearing from Deep-water Point N. N. E., distant about 4 miles; when this peaked hill and peaked islet are in one bearing N. N. E. ¼ E., the 2¼ fathoms bank is on the same line of bearing. A small ship may pass to the westward of the bank in 4 fathoms, sandy bottom, but not advisable for a large one.

Tides.

The tides are sufficiently strong to admit a ship to *back* and *fill* from Mamee-chow to the anchorage, as the channel is too narrow for working. It is high water about 8½ hours on full and change of moon at the anchorage, and the tide rises from 7 to 8

* Mammee signifies breasts or paps, and chow, an islet or small isle.

feet. The harbour may be considered safe for ships of any size, being sheltered from southerly winds by Mamee-chow Point, and Mount-Look-Out, 740 feet high; by other high land of the island from East and N. E. winds, and by the high land of Koan on the opposite coast from westerly winds. The west side of the bay, between Mamee-chow and the Brothers, should not be approached under 5 fathoms, the bottom being sandy, with shoal water under that depth.

Bluff Point, and south side of Hai-ling island. Bluff Point, bearing E. by N. 3 miles from Mamee-chow, is high, and has 9 and 10 fathoms water close to; between them, the land is cultivated, and forms a bay. To the eastward of Bluff Point the land forms a bay with a large sandy beach; and 4 miles N. E. by E. ¾ E. from that point are two rocky islets close together, appearing as three small hummocks; they may be passed at the distance of a mile in 7 or 8 fathoms. A little inland from these stands Sugar-loaf Hill, which does not shew its peak when seen to the eastward of Bluff Point.

Close to the east point of Hai-ling-shan, and bearing E. by N. ¾ N., distant 5½ miles from the two rocky islets, there is a small island, having 7 fathoms close to it, and to the east end of Hai-ling-shan; but S.W. by S., 1¼ miles from the small island, there is a reef of rocks nearly covered at high water, which has 6 fathoms close to, and may be passed about a mile off in 7 or 8 fathoms. On the east part of Hai-ling-shan, contiguous to the sea, there is a remarkable patch of red sand, discernible when off the Mandarin's Cap.

Ty-oa Point and Bay. TY-OA POINT and BAY, about 5½ leagues E. N. E. from the east end of Hai-ling-shan, and bearing from Mandarin's Cap N. N.W. ¼ W., distant 16½ miles, is in lat. 21° 43′ N., lon. 112° 15′ E. The depths decrease regularly coming from Mandarin's Cap to 4¼ fathoms at low water, close to Ty-oa Point; inside the point, and in the extensive bay to the N. W., the water is shoal. Ty-oa Village is round within the point, and is the residence of a mandarin; here, a large ship might procure water, or get a letter forwarded to Canton, but the water is too shoal to anchor under shelter of the point, except for small vessels. There is a white building amongst some trees on an elevated point a little inside Ty-oa Point, by which the approach from the southward to this place may be known. A small vessel may anchor within half a mile of the point in 3 or 3¼ fathoms at low water, and be sheltered from easterly winds; but she must not go near the island that lies a little inside, as some rocks covered at high water, with 4 fathoms close to them, project to the southward of it; they bear from Ty-oa Point W. ½ N., distant 1¼ miles. Close to the town there are 2½ fathoms water, where the salt junks take shelter when chased by the Ladrones, and are protected by two old batteries.

The following islands and rocks lie off the coast, between Hai-ling-shan and Haw cheun.

Mandarin's Cap. MANDARIN'S CAP, called FAN-SHEE-AK* by the Chinese, in lat. 21° 28′ N., lon. 112° 22½′ E., is a barren white rock, about 200 feet high, converging gradually to the summit, and terminating in a sharp peak: near it, to the northward, lie two other rocks, one of which is very small. From Mandarin's Cap, Nam-oa Harbour bears N. E. by E., distant 13 miles, and the south end of St. John Island E. by N. ½ N., nearly 8 leagues. On the south and west sides there are 15 and 16 fathoms, mud bottom, within a cable's length of the rock, and 13 fathoms a little to the northward. Off these rocks

* *i. e.* White Rock.

Currents. in August and September, when easterly winds frequently prevail, the current sometimes sets to the westward 3 miles per hour; abating only to 1½ miles per hour when the tide, under ordinary circumstances, would be setting to the eastward. The westerly current constantly prevails along this coast during the Easterly Monsoon, and frequently in the South-west Monsoon, particularly if the wind veer to the eastward.

Nam-Pang. NAM-PANG, bearing N.W. by W. ¾ W., distant 10½ miles from Mandarin's Cap, being the next island to it, is high at the west end, and about 1½ miles in length; on the north side, a small bay nearly separates the island into two parts. It is safe to approach, having 9 and 10 fathoms near the shore all round, but it is destitute of fresh water.

Round Island. ROUND ISLAND, bearing West 3½ miles from Nam-pang, is small, and named from its appearance; to the S. S. Westward of it about 2 miles there are two rocks above water, with 10 fathoms depth betwixt them and the island, and no hidden danger.

Quoin. THE QUOIN is an islet, resembling a gunner's quoin, lying close to the east side of Neewok Island, and 2¾ miles N. N.W. of Nam-pang; the passage between it and the latter has 8 and 9 fathoms water, and clear of danger.

Nee-wok. NEE-WOK is an island of moderate height, about a mile in length, bearing from Nam-pang N.W. ¾ N. about 3½ miles; there is a small rock above water betwixt it and the Quoin, but no other danger; the depths being 8 and 9 fathoms close to it all round.

Ty-wok. TY-WOK, in lat. 21° 39′ N., about 1½ miles N. N.W. from Nee-wok, and the N. Westernmost of these islands, is high, appearing like a saddle when viewed from S. Westward. There is a little bay on its north side, where fresh water can be procured, to the westward of a small temple near the beach. There are 8 fathoms, soft bottom, in the passage between this island and Nee-wok; and S.W. by S. one mile from Ty-wok, and N. W. ½ W. from the summit of Nam-pang, there is a rock nearly level with the surface of the water, with 7 fathoms all round. It is generally visible 3 or 4 feet above water, and the sea always breaking upon it, renders it conspicuous in passing. The depths between Ty-wok and the east end of Hai-ling-shan, from which it is distant 7 miles, are 7 and 8 fathoms; and to the N. Eastward, betwixt it and Ty-oa Point, they are 5 and 6 fathoms.

Mong-chow. MONG-CHOW, in lat. 21° 39′ N., lon. 112° 29′ E., a short distance westward from Haw-cheun, and bearing N. N. E. from Mandarin's Cap 11¼ miles, is a high island, about 2½ miles in length, covered with verdure: there is a town near its summit, only discernible from S. Eastward; and at a short distance from the south side the island lies a high rock, with 4 fathoms close to; there are also some rocks off the N. E. point.

Small vessels may anchor in 3 fathoms at low water, on the west side this island, during easterly winds; and fresh water may be procured at a small beach on that side, near the south point. Between the north end of the island and the coast the water is very shoal, and there are only 2 fathoms at low water, in the channel betwixt it and

Haw-cheun; but the bottom is all soft, with a very regular decrease in depth from Mandarin's Cap to these islands.

HAW-CHEUN, or FALSE ST. JOHN, is a high island, extending N. E. and S.W. about 11 miles. The S.W. end, in lat. 21° 35′ N., lon. 112° 31½′ E., is a bluff point, having 7 and 8 fathoms water close to, and bears W. ¼ N. from the south end of St. John, distant about 14 miles. Close round this point on the west side there are two small bays, with sandy beaches, having 3½ fathoms water, where small vessels may take shelter. A large ship is sheltered from easterly winds by anchoring in 5 or 6 fathoms, soft mud, about a mile off: in the Gunjavar, of Surat, in 1787, we anchored here in 6½ fathoms, about 1½ miles off shore, with the south point of Haw-cheun bearing S. E. by S., the village Ty-han E. N. E. ½ N., observed lat. 21° 36′ N. At this village, a few bullocks and other refreshments may be procured, and fresh water in the southernmost small bay. This anchorage is generally called Haw-cheun Road, or Bay. Haw-cheun.

NAM-OA HARBOUR, or HAW-CHEUN HARBOUR, named from the village Nam-oa, situated therein, is formed between the S.W. end of Haw-cheun and Nam-oa, an island a little to the eastward, which fronts the south end of Haw-cheun. Although rather small, this harbour is safe and convenient for refitting a ship, after being disabled by a Ty-foong, or otherwise requiring shelter. The south or large entrance, betwixt Nam-oa Island and the high bluff S.W. point of Haw-cheun, is three-quarters of a mile wide; having an islet on the east side, called Passage Island, joined to the west point of Nam-oa Island by a few rocks. Passage Island is in the same latitude as the S.W. point of Haw-cheun, 21° 35′ N., and in lon. 112° 34½′ E., by chronometers from Macao. This south entrance is about 1½ miles eastward of the high bluff S.W. point of Haw-cheun, and is preferable to the eastern entrance for ships drawing above 16 feet water; having 6 fathoms in it, gradually decreasing to the sandy beach at the village fronting it, and no danger whatever. With an easterly wind, the best anchorage for a large ship is about half-way between Passage Island and Green Point, which has a round mount on it covered with grass, and forms the N.W. point of Nam-oa Island; here, she will have 4½ or 5 fathoms, soft mud, at low water, according as her berth is near to or farther from Nam-oa Island. She will be sheltered by this island, which is 548 feet high, to the eastward, and by the high land of Haw-cheun to the northward, round to S.W.; from whence, if it blow strong, a long ground swell rolls in, rendering it necessary to move farther in, to the western part of the harbour, where is 4½ to 4 fathoms, mud, at low water. Nam-oa Harbour. Passage Island.

The eastern entrance, formed betwixt Nam-oa Island and the S. E. part of Haw-cheun, has 4½ fathoms, gradually decreasing inside to 3½ fathoms at low water spring tides; and although it is the most contracted of the two, will be found very convenient for small ships. The best berth here for a small ship is abreast the sandy beach on Nam-oa Island, which forms Green Point; not so far in as to open the south entrance, but to see it over the narrow neck of that point. In this berth, she will have 3 fathoms at low water spring tides, and will be in a good situation to protect her boats when watering; although exposed to the wind between E. N. E. and E. by S., no swell of consequence can roll in, being prevented by the islands that lie contiguous to the entrance.

To enter the harbour by this channel, coming from eastward, after rounding the south end of St. John pretty close, steer about W. by N., or, if the ebb is running, more northerly, which course will bring a vessel near the Boat Rock, that bears from St. John South Point, W. ¾ N., distant 7 miles: it has 7 fathoms water close to, is about To sail to the harbour by the eastern entrance.

the size of a small boat, never entirely covered, and the sea generally breaks on it. To the northward of this rock about three-quarters of a mile lies Round Island, being the southernmost of a chain of rocky islets, that fronts the east side of Haw-cheun. Having passed to the southward of the Boat Rock at a small distance, steer from it about W. N.W. for the entrance of the harbour, distant 3 miles. From the S. E. part of Nam-oa Island, a few rocks project about a quarter of a mile, which have 7 fathoms close to them, and must be left to the southward in entering the harbour.

Watering place.

There are several watering places about the harbour, the largest and most convenient of which is in a sandy bay on Haw-cheun, bearing from Green Point N.N.E.; here the water comes close to the beach.

Barren Island, about a mile to the northward of Green Point, has a white conical rock inside of it; both are connected with Haw-cheun at low water, and separate Watering Bay from Nam-oa Bay, where the village* of this name, consisting of about 100 brick houses, is situated at a small distance from the shore. Here, a few refreshments and fish may be procured: but the surf renders the landing difficult, when the wind blows strong from the southward: it is then proper to land to the eastward of Barren Island. High water at full and change of moon, about 10 hours, rise of tide 7 to 8 feet; and then, a small drain of ebb sets out through each of the channels.

Tides.

Five Islands, east side of Haw-cheun.

THE FIVE ISLANDS, fronting the east side of Haw-cheun, are mostly small, and bound the west side of the channel, formed between it and St. John. Round Island, the southernmost of them, and the rock bearing S. by E. $\frac{1}{2}$ E. nearly three-quarters of a mile from it, have been mentioned above; there are also other rocks, high above water, near it on the south side. The next island to the northward of Round Island is the largest of the group; high at each end, and nearly separated in the middle, with some rocks close to it on the east side. The third island is high, and covered with grass. The fourth, called Pi-pa-chow, is of middling height, covered with grass, having some rocks above water projecting off its south end; there are $4\frac{1}{2}$ fathoms water close to these rocks, and between them and the other island to the southward, and the same depth close to the east side of Pi-pa-chow. The fifth, or northernmost, of these islands lies nearest the Haw-cheun shore, with 4 fathoms at low water betwixt it and that shore. There is no hidden danger near these islands, and a ship drawing not more than 15 feet water may either pass, or anchor between them and Haw-cheun, keeping rather nearer to the islands: here, she will find shelter, in 3 or $3\frac{1}{2}$ fathoms, soft ground, at low water, and can be supplied with refreshments from the town of Haw-cheun, which stands in a small bay fronting the islands.

All the space between these islands and St. John is clear from hidden dangers, with depths of 5 and 6 fathoms, soft ground. The tides are strong in the springs, the ebb setting out, and the flood to the northward through the channel, and rise and fall about 8 feet. During the neaps they are weak, and much influenced by the winds.

To the northward of the Five Islands the depths increase to $4\frac{1}{2}$ and 5 fathoms, in a direct line towards the west point of St. John, and continue the same in passing about mid-channel between this point and the island that lies off the N. E. end of Haw-cheun.

Safe anchorage.

Here is the narrowest part of the channel, which is about a mile wide, where ships may be sheltered during bad weather. Water may be got on St. John almost in every

* Strangers landing here, or at similar places where there is no fort, nor resident Mandarin, ought to be on their guard, in case of meeting with any of the crews of the Ladrone boats; for they frequently land, and put the defenceless villages under contribution, and might make prisoners of Europeans, when that can be done with safety, in hope of getting a large sum for their ransom.

small bay. The entrance of the channel, generally called St. John Road or Bay, between the south part of St. John and the Five Islands, is more open to blowing weather, for some ships at anchor there have been obliged to cut their cables and put to sea; the Bombay, after cutting away her main-mast in a Ty-foong, to prevent being driven on the rocks, was afterwards obliged to cut from her anchors, and the pilot ran her on shore in the mud, upon the coast to the westward of Mong-chow; here she remained one spring, and was obliged to take out part of her cargo before she floated.

ST. JOHN ISLAND, or CHANG CHEUN-CHAM, in length about 5 leagues N.N.E. and S. S.W., has been generally considered as two islands: in coming from eastward or westward, the high land on each extremity appears separated by a large gap or vacant space, which, on a near approach, is found to be a low narrow isthmus of sand, uniting the high land, and having a bay on each side. St. John Island, and adjacent dangers.

On the east side the island the depths are 7 and 9 fathoms near it, and no hidden danger, excepting a small rock visible only at low water; it lies in 7 fathoms nearly a mile off shore, and about 2 miles to the southward of the N. E. point of the island, opposite a bluff point, from whence the land stretches to the S. Westward. Distant from the N. E. point of the island about three-quarters of a mile there are some rocks, always above water, with a passage of 8 and 9 fathoms between them and the point; and to the northward of them there are 5 and 6 fathoms. The north side of the island extends about 11 miles N. E. by E. and S.W. by W., having two small bays separated by a narrow peninsula; the western one, called Sam-chow-tong, or Tree Island Bay, is the largest, with several small islands in it, and only $2\frac{3}{4}$ fathoms water within the point; there is a village in this bay, where refreshments may be got. All this side the island is free from danger, the depth generally between 4 and 5 fathoms near St. John, decreasing gradually towards the land to the northward, which is distant 6 or 7 miles. The bottom is all soft mud, and probably the N.W. side of St. John is a safe place during a Ty-foong: if a ship drag her anchors and settle in the mud, the risk of sustaining damage cannot be great. Several ships drawing 19 or 20 feet water are carried by the pilots betwixt Haw-cheun and St. John, round the north end of the latter, and between the Great and Little Wizard Rocks. In April, 1787, we went through this channel in the Gunjavar, drawing 20 feet.

The large bay on the west side St. John, opposite the sandy low isthmus, extends into the island a great way; but a ship cannot enter it, the water being shoal. From the west point of St. John, which forms the north side of this bay, Shittoe Point bears S. by E. $\frac{3}{4}$ E., distant $4\frac{3}{4}$ miles, and separates it from Shittoe, or Sat-tye Bay, which is on the S. E. side the latter point. This bay has 6 and 7 fathoms water at the entrance, and a small vessel may go farther in, and anchor in 4 or $3\frac{1}{2}$ fathoms; but it is too narrow for a large ship, unless she were to warp in. There is a watering place at the south side the entrance, and a village at the bottom of the bay; which, with several others on the island, have suffered much from the depredations of the Ladrones, who often haul their vessels up here to clean their bottoms. Close to the islet and detached rock off the N.W. point of the bay there are 6 fathoms water.

Between Sat-tye Bay and the south point of St. John there is another small bay, having 6 fathoms water, and 10 fathoms close to some rocks, which lie off its south point.

WY-CAUP, a small high rocky island, in lat. 21° 34′ N., lon. 112° $47\frac{1}{2}$′ E., fronts the south end of St. John Island, and lies on the east side the point, being separated Wy-caup.

from it by a narrow passage: there are 13 and 14 fathoms close round this island on the outside.

Lieu-chew. LIEU-CHEW, or OU-CHOW, in lat. 21° 36′ N., of moderate height and barren aspect, is separated from Wy-caup and the S. E. part of St. John by a safe channel 2 or 3 miles wide, with 13 to 15 fathoms water; and there is deep water close to the island all round, 17 and 16 fathoms on the south side, 13 fathoms on the north side, decreasing gradually to 10 fathoms close to the outermost Wizard Rocks, from which it bears S.W. $\frac{1}{2}$ S., distant 4 leagues.

Wizard Rocks. THE WIZARD ROCKS, off the south end of Ty-kam, between St. John and Cou-cock Island, are separated into three divisions; the outermost division consists of a group of five or six rocks, about 30 feet high, in lat. 21° 47′ N., lon. 113° 1$\frac{1}{2}$′ E., having 10 fathoms, mud, at the distance of a cable's length from them. The Great Wizard Rock bears from the outer group N. by W. $\frac{3}{4}$ W., distant 1$\frac{1}{4}$ miles, and 2 miles northward from it lies a white conical rock, called the inner or small Wizard Rock; near the great rock the depths are 6 and 7 fathoms, and near the small one about 5 fathoms, soft ground. Betwixt them, but nearest the Small Wizard, there is a rock, covered at high tide, making it necessary for a ship passing betwixt them to keep nearest to the Great Wizard. There is another rock, always above water, bearing from the Small Wizard W. by N., having 4 fathoms near it; and there is a passage with 4$\frac{1}{2}$ fathoms water betwixt the Small Wizard and the south point of Ty-kam.

Ty-kam. TY-KAM ISLAND, in lat. 21° 52′ N., close to the northward of the Wizard Rocks, is of considerable height, of darker aspect than the other land, and in clear weather appears with red streaks: on the south part, in a small bay fronting the Wizard Rocks, behind a mound of sand near the beach, there is a village, and fresh water may be got at the western side of the beach. Between this island and Toon-qua, the next island to the westward, the water is shoal, and also in the large space to the westward of Toon-qua.

Cou-cock. COU-COCK, the next island to the eastward of Ty-kam, is high, and extends about 3$\frac{1}{2}$ miles East and West: the S.W. point, in lat. 21° 50′ N., lon. 113° 7$\frac{1}{2}$′ E., has a remarkable rock close to it, resembling a boat under sail. The west side of the island is formed by a steep hilly ridge stretching North and South, having good anchorage under it in 6 fathoms, where ships are sheltered from N.E. and East winds; and there are 6 and 7 fathoms close to the south side of the island.

Ty-mong. TY-MONG is a considerable island to the northward of Cou-cock, having an islet, called Sam-cock, joined to its S.W. point by rocks visible at low water. Betwixt Ty-kam and Sam-cock, the depths are 5 and 4$\frac{1}{2}$ fathoms; and there is a channel, about 1$\frac{1}{2}$ miles wide, betwixt the latter and the N.W. end of Cou-cock, having in it 3$\frac{1}{2}$ and 4 fathoms. A vessel proceeding through it should keep close to Cou-cock, and will have 4 or 3$\frac{1}{2}$ fathoms water on the north side this island, where fresh water may be got at the westernmost of two small bays, formed on the north side the island.

Ty-loo. TY-LOO is a high island, with a large *white patch* on its eastern side, resembling a ship's mizen or mizen stay-sail, when viewed in some directions. This island is separated from Cou-cock by an opening about 2 miles wide, with 7 and 6 fathoms water

in it, decreasing gradually towards Ty-mong, which fronts the opening to the N. Westward. By passing close round the east point of Cou-cock, it appears that ships, with a moderate draught of water, might anchor to the northward of that point in 5 fathoms, sheltered from most winds: and small ships may find good shelter from easterly winds, by anchoring close under the west part of Ty-loo in 4 fathoms. The south end of Ty-loo is in lat. 21° 52½′ N., distant 9½ leagues from the Grand Ladrone; and it is safe to approach, having 6 and 7 fathoms close to the South and S.E. sides.

CANTON RIVER.

OUTER ISLANDS AND CHANNELS.

SHIPS approaching the COAST of CHINA, particularly those of small size, ought always to have some guns ready, in order to repel any attack that may be made by the Ladrones, or other piratical boats, which are sometimes mistaken for fishing boats.

The Singapore Chronicle states, that the ship Troughton, which sailed from that port June 18th, 1835, was attacked by about 30 Chinese fishing boats, 100 miles to the S. W. of Macao, on the 6th July; and was boarded by 300 men, who lashed the officers and crew to the deck. They plundered the Troughton of 50,000 dollars, and of merchandize to an equal amount.

SAM-CHOW, forming the western side of the entrance to the Broadway, is the next large island to the N. Eastward of Ty-loo; the space between them is shoal, with some islets and rocks adjoining the N. E. end of the latter. The depths decrease gradually off Sam-chow, but it is not so bold to approach as the islands to the westward, for shoal water, of 3 to 4 fathoms, extends out from it a considerable way; there is a conical islet and some rocks nearly touching its east point, with 3 fathoms water close to them. Sam-chow.

MONTANHA, forming the eastern side of the entrance to the Broadway, is a large high island to the N. E. of Sam-chow, and close to it on the N. E. side is the Island Ko-ho; these two islands bound the Typa on the south side; and the entrance or great channel leading to Canton River is bounded by them on the west side, and by Potoe and the other islands adjacent on the east side. Montanha.

The entrance to the BROADWAY is formed, as above stated, by Montanha on the east, and Sam-chow on the west side, and has sufficient depth to admit a large ship a considerable way up. It may be found very useful to such as intend to make a long stay near Macao, or to those who have parted from their anchors, and draw too much water to attempt the Typa. Broadway.

The Water Islands are two small islands close off the south end of Montanha; one mile N.W. ¾ N. from them lies another small island, having a little bay, called Lark Bay, betwixt it and the west point of Montanha, with 2½ fathoms in it at low water: Water Islands.

these islands are on the east side the Broadway Entrance, and the conical hill at the S. E. end of Sam-chow, bearing S.W. by W., distant 4 miles from the Water Islands, is on the western side.

Directions for sailing into the Broadway.

The best time to enter the Broadway is with the first of the flood, and if a ship at anchor in Macao Road be obliged to run for it with a N. E. or East wind, about three-quarters ebb will be the best time to leave the road, that she may meet the first of the flood when she reaches the Broadway Entrance, where it flows sooner than in the road. Having rounded Ko-ho or Cow-ow Point in 5 or 4½ fathoms about 1½ miles distant, steer at any convenient distance round the high S. E. extreme of Montanha, which has 3 fathoms near it, deepening gradually to the eastward towards Potoe Island. When abreast the point of Montanha, the Water Islands are perceived on with each other, near the western extreme of a bay with a sandy beach: as there is not more than 2¾ fathoms in this bay, it should be avoided, by steering a course to pass about half or three-quarters of a mile to the southward of the Water Islands, in 4½ fathoms water, then haul round the western island, preserving the same depth and distance. Do not exceed the distance of one mile to the westward of this island, for beyond that the water shoals fast to 3 fathoms, towards the Sam-chow shore. From the Water Islands steer N. N. W. or N. by W. ½ W., giving a berth of a quarter of a mile to the other island lying to the northward of them. This course will carry you to the west point of Montanha, in 5 fathoms water, off which you may anchor in 5 to 6 fathoms, and be sheltered, if you intend waiting only the termination of a gale.

From Montanha West Point, the water shoals gradually towards Ma-cheung-cock, the island on the west side the channel, adjoining to the N. E. end of Sam-chow; there is generally a line of fishing stakes extending westward from the point, with passages among them for vessels. Mong-chow, or Ballast Island, in lat. 22° 8½′ N., bears from the west point of Montanha N. N. W., distant 2½ miles, and between them there are two openings to the eastward, one leading to the Typa, the other to Macao, both so shoal as only to afford a passage for boats. About 1¼ miles N. Westward of the west point of Montanha, and fronting the opening through the Typa, there is a rock about the size of a small boat, never entirely covered. The channel for ships is directly from the West Point to this rock, passing it on the west side about a cable's length; for W. ¼ S. from it about a mile there is another rock, and shoal banks bound the channel on both sides. From West Point to Mong-chow the water is shoal, the edge of the bank leaving only a narrow passage on the east side the easternmost rock, with 3¼ fathoms at low water. Pak-ting, a small island with a sharp hummock on its N.E. end, lies on the western bank, distant 3 miles W. ½ N. from Mong-chow: the bank is composed of mud, having 1½ fathoms water on it, the edge of which extends 1½ miles off Pak-ting towards Mong-chow, and commencing at the western rock, stretches to the N. N. W. the whole length of the channel, contracting it to about the breadth of 1 or 1½ miles.

If you intend to proceed farther up the Broadway than the west point of Montanha, steer from that point N. N.W. through among the fishing stakes near it, towards the easternmost rock that fronts the opening through the Typa; the soundings will be 5½ or 5 fathoms, and the rock may be passed within a cable's length on the west side, for at the distance of half a mile on either side the water is shoal. From it steer N. N.W. ½ W. 1½ miles, and you will then be abreast the ruined towers on Mong-chow, in 4½ or 5 fathoms water, and may perceive a church, with the Bar-Fort of Macao, through the gap between that island and the Green Hill that is separated from its north part at high water. This is a safe and convenient anchorage, about 5½ miles to

the westward of Macao, and the boats are kept in sight when passing to or from that place. Fresh water may be got in a small bay to the northward, under the Table Mountain, having a remarkable stone on its summit, called Kehan-shee-ak, which is 895 feet high. Here the tide rises 7 or 8 feet at full and change of moon; high water at $10\frac{1}{4}$ hours; the neap tides are very irregular, there being then only one flood and one ebb, of any considerable strength, during the 24 hours. Tides.

The channel for ships, between Mong-chow and the Bluff Point to the northward, becomes narrow. If to proceed higher up than that island, the course is N. N.W. $\frac{1}{2}$ W., which will carry you about a mile above Bluff Point, in 5 to $4\frac{1}{2}$ fathoms, and this point ought to be passed within half a mile: if drawing more than 16 feet, wait here for the last of the flood, to carry you past the small island Tang-lung-chow, lying a little to the northward, off which there are only $4\frac{1}{2}$ fathoms at high water. From Bluff Point, the course is N. N.W. $\frac{3}{4}$ W. to pass about half a mile to the westward of Tang-lung-chow; and you should not go much farther West, nor so near the island as to shut in the North Hillock of Mong-chow with Bluff Point. When abreast the island, steer N.W. $\frac{1}{2}$ W., or directly for the entrance of the river, keeping about half a mile off Ama-cock Point, which forms the east side the entrance; it has a pagoda on it, and is well covered with trees. Here, the depth begins to increase, and in steering to pass Motow Fort, about a quarter of a mile off it, there are 8 or 9 fathoms. About 4 or 5 miles above this fort, the Broadway River separates into two branches: the easternmost, called Hong-shan River, communicates with Canton, and by it the trade is mostly carried on between this city and Macao. The wide opening to the eastward of Ama-cock Point, called the Flats, leads to Macao; there is only a passage for boats through it, and the Ladrones, when refractory, have generally a fleet stationed about this part of the Broadway, to intercept boats going to or from Macao.

Passage of the Nemesis through the Broadway.

In Commodore Sir J. J. Gordon Bremer's despatch, relative to the operations of the fleet under his command in March, 1841, an account is given of the Hononrable Company's steam-vessel Nemesis having forced a passage through the Broadway from Macao to Whampoa. The following extracts have been selected to point out her track. "At 3 A.M. on the 13th, the Nemesis, with the boats of the Samarang in tow, weighed from Macao Roads, and proceeded over the flats between Twee-lien-shan and Toi-koke-tou Islands to the Broadway River. At 8 A.M. they came in sight of Macao Fort. On reaching Point Ho-ock-tow the river is divided into two channels; that to the right takes a sudden sharp turn and becomes very contracted in its breadth; here they discovered Tai-yat-kok, a field battery (recently constructed) of 14 guns, very strongly posted on a rising ground on the left bank of the river (surrounded by overflowed paddy fields), which enfiladed the whole line of the reach leading up to it. On entering the reach in which they were, they observed on the right bank of the river a new battery, scarcely finished, with 10 embrasures, but without guns, and Hoc-kang Fort close to it, well built of granite, surrounded by a wet ditch, and mounting 14 guns and 6 gingalls. Abreast of these (which they flanked) the river was strongly staked across."

Mr. Hall (commanding the Nemesis) having dexterously managed to get his vessel through the centre passage of the stakes, which was just wide enough to admit of her passing, they arrived at 4 P.M. off the large provincial town of Hiang-shan. "The dense population thickly crowded the banks, boats, junks, house-tops, the large Pagoda, and surrounding hills; both sides of the river were packed with trading craft of the country in the closest possible order, the centre of the river, which is very narrow, having merely sufficient space to allow the steamer's paddle-boxes to pass clear of the

junks moored to its banks. At 6 P.M. the steamer passed on into a narrow shallow channel, scarcely more than the breadth of a canal, where she anchored head and stern for the night. At day-light, on the morning of the 14th, they weighed and proceeded up the river in the steamer's draft of water, and not broader than her own length, grounding occasionally on both sides; at 7h. 50m. arrived at the large village of Hong-how, with a fort of the same name at the upper part, which flanked a strong and broad line of stakes 20 feet wide, completely across the river, filled up in the centre by large sunken junks laden with stones." After the Nemesis had made good her passage through the stakes, which was effected after 4 hours' incessant labour, they arrived at 4 P.M. off a military station, where the steamer anchored for the night.

At day-light on the 15th, the Nemesis continued her course upwards, and at 7h. 30m. arrived off the large village of Zamchow. On moving up to Tegnell, a large town on the left bank of the river, three forts were passed, all dismantled and abandoned, and on proceeding up to Whampoa three more dismantled forts were observed. At 4 P.M. the Nemesis came to in that anchorage, having in conjunction with the boats destroyed 5 forts, one battery, two military stations, and nine war junks.*

If the wind does not admit sailing directly into the entrance of the Broadway, there is room for short tacks between the Water Islands and the rocky islets off Sam-chow, taking care of the latter shore, which is shoal. Farther in, the channel contracts a little, but the tides are of sufficient strength to *back* and *fill* past the rocks that lie opposite the Typa, or where the channel may seem rather narrow for working.

Tides. The direction of the flood outside is governed principally by the winds: with strong easterly winds, it comes from E. S. E.; and when S. Westerly winds prevail, from South. The ebb runs generally to the S.W. Inside, the tides take the direction of the channel.

Freshes and currents. THE CANTON RIVER FRESHES set *almost* constantly from the south end of Montanha, along the shores of the islands to the westward, at the rate of 1 to 2 miles an hour, particularly with strong easterly winds. When at times there seems to be on the surface a flood tide setting to the eastward, or into the entrance of the river, the freshes underneath continue to run outward, by which ships are rendered ungovernable, even in fresh breezes. Many ships from this cause, after getting near Montanha, or betwixt it and Potoe, have been drifted along the islands nearly to St. John, whilst making every endeavour, with moderate breezes, to keep their heads to the eastward. Ships, therefore, steering in for the channel betwixt Potoe and Montanha, should never borrow near Sam-chow, or the other islands to the westward, unless it is blowing a strong gale at S.W.; for if they get into shoal water near the islands, when the winds are light, they must expect to have the stream of the eddy current, and be drifted to the westward.

These freshes, or westerly currents, abate at times, and then weak tides set to the eastward; but as these are not of long duration, ships should keep on the east side the channel in deep water towards the Ladrone and Potoe, and anchor instantly, if the current begin to drift them to the westward.

To approach the land, or get to the eastward. In the strength of the South-west Monsoon, ships should endeavour, if the wind be steady betwixt S. E. and S.W., to make the Grand Ladrone bearing nearly North, and

* From so general an account it is impossible to ascertain the steam-vessel's track with any thing like accuracy, but it was thought desirable to give as many particulars as could be obtained respecting a passage hitherto so little known.—ED.

never fall in with the islands to the westward; this is the more necessary after the middle of August, when easterly winds are likely to prevail several days together, as they are, more or less, at all seasons. Ships which fall to leeward about St. John, in September or October, generally make a tedious passage to Macao; for the pilots carry them close along the islands, where the current or freshes setting to the westward oblige them to remain at anchor great part of the time. But as these freshes prevail only in shoal water, near the islands, ships which stretch well out into the open sea, and take every advantage of the favourable shifts of wind, will generally get more speedily to the eastward than those which continue to work close in with the islands.

THE GRAND LADRONE, called by the Chinese TY-MAN-SHAN, is in lat. 21° 57′ N., lon. 113° 44″ E., or 12 miles East of Macao, and 29 miles East of Canton Factories by means of many chronometers.* It is a steep, bold island, the N.W. part forming a round mount or dome, which, being more elevated than the remainder, may be seen 9 leagues from the deck, and 14 leagues from the mast-head, and makes it easily known; for none of the other islands have a similar appearance, although most of them are high: on the S.W. part there is a small bay, where the fishing boats take shelter in the N. E. monsoon. The island is about 2 miles in diameter, with a rocky aspect close to the sea; but it is safe to approach, the depths near it being generally 16 or 17 fathoms. Being the outermost island, *directly* fronting Canton River, it is used as a standard position by ships sailing to or from that river; and with the Little Ladrone adjoining, and Potoe to the N.Westward, bounds the east side of the great channel, leading to the river and Macao Road. Grand Ladrone.

THE LITTLE LADRONE, or POCKING-HAN of the Chinese, is separated from the west side of the Grand Ladrone by a narrow passage, having 16 or 17 fathoms water in it, but too confined for a ship unless in a case of necessity. This island is of convex sloping form, not so much elevated as the former. Near the west side of it the depths are 11 and 10 fathoms, decreasing gradually to 6 fathoms about half a mile to the southward of Potoe; there are 14 fathoms near its outer point, and near the south and S. E. sides of the Grand Ladrone, 17 to 18 fathoms. Little Ladrone. Soundings.

Close to the N. E. part of the Little Ladrone lies a small rocky islet; and N. by W. from this islet about half a mile there is a Black Rock, covered at high tide with 10 fathoms close around: if, therefore, a ship pass this way at high water when the rock is covered, she must keep about mid-channel between the Little Ladrone and Tonghou Island, which is $2\frac{1}{2}$ miles more to the northward. This is the only danger near the Little Ladrone, excepting a high rock close to the shore on its N.W. side, having near it 9 and 10 fathoms water.

About 10 leagues South from the Grand Ladrone, the depths increase to 27 or 28 fathoms; about 20 leagues from it, to 42 and 44 fathoms; and soundings extend on the same meridian to about lat. 20° N.; from hence they continue westward on a parallel to Hainan Head; but converge towards the land, with deeper water to the eastward of the meridian of the Ladrone. Ships falling in with the land in thick weather may easily distinguish whether the land seen is that of the islands to the eastward or to the westward of the Grand Ladrone; for the Asses Ears and Lema Islands have soundings of 23 and 24 fathoms very close on them on the outside; whereas, the islands betwixt the Grand Ladrone and St. John have only 10 and 11 fathoms at a How to distinguish the land.

* Captain Ross, in his survey, makes it 11 miles East of Macao, and 27′ 13″ East of the Factory at Canton, or in lon. 113° 43′ E.

considerable distance outside. These are also large and of regular appearance, resembling a coast more than islands; but those to the eastward, excepting the Great Lema, which is long and of an undulating form, are detached, high, and uneven.

A ship falling in with the islands to the eastward, if the weather is not very thick, should push through some of the channels amongst them towards the river; these are in general safe, and may be navigated without a pilot; for by losing time outside, or close to the islands, she may be baffled by light winds and calms, which are frequently the harbingers of a Ty-foong.

Potoe Island.

POTOE, or PASSAGE ISLAND, in lat. 22° 2′ N., bearing N.W. by N. from the N.W. end of the Little Ladrone $4\frac{1}{2}$ miles, is a flat sloping rock, visible about 3 leagues from the deck, with 6 or $6\frac{1}{2}$ fathoms near it all round; it ought not to be approached too close, as the eddies occasioned by the freshes may render a ship ungovernable, and probably drift her towards it, or towards Woong-boo, the adjacent island. The channel betwixt it and the S. E. point of Montanha is about 5 miles wide, and safe; the depth is 6 or $6\frac{1}{2}$ fathoms in mid-channel, or rather nearest to Potoe, which is the best track, decreasing over a bottom of soft ooze to $5\frac{1}{2}$ or 5 fathoms, in steering N. N. Eastward for Macao Road: there are $3\frac{1}{2}$ fathoms close to the Point of Montanha.

Remarks on making the coast.

During the strength of the South-west Monsoon, ships endeavour to fall in with the Grand Ladrone bearing about North or N. by E., and pass into the river by the western channel, between Potoe and Montanha; but late in the season when the winds incline easterly, or at any other time when they are expected to come from the northward or eastward, it is prudent to make the Great Lema, and to proceed in by that channel. When Ty-foongs happen on the coast, they generally commence in a moderate gale from the northward, which is a leading wind for passing through the Lema Channel into the river; and as the wind commonly veers to the eastward before it blows very severely, a ship with the first of the gale may get well up the river above Lintin, where these storms blow with less violence than outside among the islands.

The approach to Canton River.

As the approach to the Canton River is probably more safe than that of any other large river on the globe, there being no sand-banks at the entrance, and the channels amongst the islands outside being *mostly* all free from hidden danger, a stranger should not hesitate to push through the nearest convenient channel without a pilot, if the weather is tolerably clear; but the tides must be attended to, as they set in different directions amongst the islands to the S. Eastward of the river, according to the prevailing winds; a strong easterly wind generally producing a westerly current or tide, which abates in strength when the ebb should be setting to S. Eastward. If an outside pilot can be obtained at a moderate rate (12 or 15 dollars), he may be useful, to run the ship into some cove or place of shelter, in case a storm should approach, or if she is in a disabled state. A ship ought not to anchor in Macao Road, when there is an appearance of stormy weather, but she should run well up the river above Lintin.

Woong-moo Island and Dry Rocks.

Leung-neeb.

About $1\frac{1}{2}$ miles to the E. N. E. of Potoe lies an island, $1\frac{1}{4}$ miles long, stretching North and South, with a peaked hill on its northern part; it is named WOONG-MOO, or WOONG-BOO; nearly half a mile off the west side of it there are some rocks above water. Eastward of Woong-moo $1\frac{1}{2}$ miles is an island named LEUNG-NEEB,* with a round islet between its south end and the western point of Tong-hou Island; the depth between Potoe and the dry rocks, or between Woong-boo and

* Dragon's Nose.

Leung-neeb, is not known: about half a mile N.W. from the north end of Leung-neeb lie two rocks covered at spring tides, which in blowing weather shew breakers; therefore, in passing the north end of this island, keep at least three-quarters of a mile distant. Sunken Rocks.

TY-LO-CHOW, bearing from the north end of Leung-neeb N. $\frac{1}{2}$° E., distant $2\frac{3}{4}$ miles, is high near the western part, sloping a little to the eastward, and it is the southern one of the range of small islands on the east side of Macao Road; it is $5\frac{1}{2}$ miles from Cow-ow, the south point of Typa, $7\frac{1}{3}$ miles from Cabaretta Point, and nearly 10 miles from Macao Town; between this island and Leung-neeb there is a good channel to enter the road from S. E., remembering the rocks off the northern point of the latter, the depth from one to the other being 7 and $7\frac{1}{2}$ fathoms, decreasing to $4\frac{1}{4}$ fathoms in the road. TY-LOCK, about half a mile northward of Ty-lo-chow, is a small rocky island, having on its summit a large rock. Ty-lo-chow. Ty-lock.

SAM-COCK ISLAND, distant one mile in a N. N. E. direction from Ty-lock, is the largest of the range; it is of moderate height, rugged in appearance, and in the form of a pyramid: between this island and Ty-lock there is a small islet, named SY-LOCK, and two rocks above water; the channels between these are so narrow, that a ship should not attempt them, on account of strong eddies, which render ships frequently ungovernable. Sam-cock and Sylock.

On the northern part of Sam-cock there is a small bay or cove for boats, and this island affords fresh water: about a quarter of a mile off the west point there are $3\frac{1}{4}$ fathoms, and the same distance off its eastern point there are only 3 fathoms water; therefore, in passing between Sam-cock Island and Chung-chow to the northward, keep in mid-channel, or nearest to the latter, in 6 or 7 fathoms water. Channel between Sam-cock and Chung-chow.

CHUNG-CHOW, distant about $1\frac{1}{4}$ miles to the N.N.E. of Sam-cock, is the northern island of the range, from which Cabaretta Point is distant 8 miles W. $\frac{1}{4}$ S., Macao Town W. $\frac{3}{4}$ N., distant about 10 miles; the outermost of the Nine Islands, near 7 miles distant, bears N.W. $\frac{1}{2}$ W., Lintin Point N. by E. $\frac{1}{2}$ E. $14\frac{1}{2}$ miles; it is in lat. 22° 10′ N., lon. 113° 44′ E.; the depth near Chung-Chow is 7 fathoms to the eastward, and 5 and 6 to the northward and westward. Chung-chow.

Along the western side this range of islands the depth is 5 or $5\frac{1}{2}$ fathoms, and on the eastern side it is 7 fathoms; the ebb runs strong from the northward along the west side of them, and the flood in eddies from S. Eastward.

When Chung-chow is bearing W. N.W., Ty-lock W.S.W., summit of Ty-lo-chow S.W. by W., the centre of Sam-cock nearly West, and the small island which is off the N.W. end of Lueng-suitow bearing N. N. E. $\frac{1}{4}$ E., there is a small and dangerous NEEDLE ROCK, with 4 feet water on it at low spring tide, and 10 fathoms close around; it is distant from the nearest shores as follows:—from Chung-chow $2\frac{3}{4}$ miles; from a small island to the southward of it $1\frac{1}{2}$ miles; from the south part of Lueng-suitow $1\frac{3}{4}$ miles, and from the S.W. point of Laff-Sammee 2 miles: when the island 3 miles S. E. by S. of Chung-chow, named Chuck-tu-aan, and the small island off the west side Lueng-suitow, are on the same bearing, about N.N.E. $\frac{1}{2}$ E. and S. S.W. $\frac{1}{4}$ W., the rock will be between the two, but nearest to the former; therefore, if a ship have occasion to enter the road by this channel, and keep about three-quarters of a mile off Laff-Sammee and the south side of Lueng-suitow, she will pass in mid-channel, and have 10 or 12 fathoms water, decreasing to 7 fathoms as she nears Chung-chow. Dangerous Sunken Rock.

Lueng-Suitow.

LUENG-SUITOW, about $2\frac{1}{2}$ miles to the S.W. of the south point of Lantoa, is high, and about the north point of it there is a peaked hill; this island is $1\frac{1}{2}$ miles long, and has not any hidden dangers near its northern side; the depths between it and the south point of Lantoa are irregular, owing to the strong eddies generally prevailing hereabout. There are 7 fathoms near the point of Lantoa, 18 or 20 in mid-channel, and 28 or 30 close over to Lueng-Suitow; there is a cove for boats on the north side the island, and a short distance to the westward of its westernmost point there is a round and high islet, with a large rock on its summit; round this islet to the northward and westward the depth is 15 fathoms. From it, Macao town bears W. $\frac{1}{4}$ N., distant $13\frac{1}{3}$ miles; the Nine Islands W. by N. $\frac{3}{4}$ N., distant nearly 10 miles; south point of Lantoa E. by N. $\frac{1}{2}$ N., distant 3 miles; and Lintin North, distant 13 miles: the south point of LINTIN SOUTH SAND is on the same bearing, therefore you will be clear of it, if you keep this islet S. by E. until Lintin Peak bear N. by E. After coming through the Lantoa Passage, from this island the course into Macao Road is West, and if bound up the river your course will be N.N.W. until you bring Lintin Peak to bear N. by E., then steer for the west point of Lintin. In a dark night, steer N. N.W. or N.W. by N. from the middle of the Lantoa Passage until you have shoaled your depth to 6 fathoms, then steer North; on this latter course, if you deepen above 7 fathoms, keep a little westerly until you arrive near or above Lintin, where you may anchor. By not deepening above 7 fathoms, you will not be too near Lintin South Sand, there being 9 and 10 fathoms close to it. The ebb tide, from the west part of Lintin to the eastward, sets South; but over on the western shore it sets to S. E.

Lintin South Sand.

Sailing Directions.

Gow-tow-chow.

GOW-TOW-CHOW, or BULLOCK'S HEAD ISLAND, next to the S. E. of Lueng-Suitow, is separated from it by a narrow channel; this island is small but high, and on the south side it forms a bay with Lueng-Suitow and Laff-Sammee. Although the channel is narrow, H.M.S. Doris ran through, and found shoal water near Lueng-Suitow; the depths near the north side the island are 15, 16, and 17 fathoms, rather irregular; but to the southward, in the bay, 3, 4, and 5 fathoms.

Laff-Sammee.

To the southward of Gow-tow-chow, and separated by a narrow channel, lies LAFF-SAMMEE, which is larger than either Lueng-Suitow or Gow-tow-chow, and which with them forms the south-western boundary of the Lantoa Passage; it is inhabited on the S. Western side, where fresh water is to be had in a small bay: this island from some views forms a peak, which is in lat. 22° 8′ 30″ N., lon. 113° 48′ 40″ E. The depth on the north side in the Lantao Passage is very irregular, from 17 to 25 fathoms in overfalls, about a quarter of a mile off, and on the south side 10 and 11 fathoms; at a short distance to the eastward of its south point there is a rocky islet, on which the fishermen have huts, and a winch for heaving up their nets.

Chi-chow Islands.

CHI-CHOW, largest island, the north point, bearing S.E. by S., distant nearly 10 miles from the south point of Lantoa, forms the south side of the eastern entrance of Lantoa Passage. This island is high, of round appearance, inhabited on the west side, and separated by a narrow channel from the small Chi-chow Island, which is lower, and to the westward of the former; there is a safe channel of $1\frac{1}{2}$ miles between the west point of the small Chi-chow and the rocky islet that lies off the eastern side of Laff-Sammee; in this channel the depth is 9 and 10 fathoms, and would be adopted by a ship bound up the river, when she enters the islands from S. E. between Chook-chow and Ichow.

Achow Islands.

ACHOW,* southern island, bearing S. E. $\frac{3}{4}$ E., distant nearly 4 miles from the south point of Lantoa, forms the north side of the eastern entrance of Lantoa Passage. The south point of Achow is high, and rises very steep, having 7 fathoms water close to; the depths between it and Chi-chow are 11 or 12 fathoms in mid-channel, 13 nearly over to Chi-chow, deepening very suddenly to 25 or 30 fathoms into a hole, or swatch, close to the point of Chi-chow. On the north side of Achow fresh water is to be procured at a little sandy beach. A short distance to the northward of Achow, about E.S.E. $3\frac{1}{4}$ miles from the south point of Lantoa, there is another island, also named ACHOW; it extends East and West about a mile, and is very narrow in the middle: from the west side of this island a sand spit extends nearly West upwards of $1\frac{1}{4}$ miles, and on the west point of this spit there are $2\frac{3}{4}$ fathoms at low water, decreasing very quick to 2 and $1\frac{1}{4}$ fathoms towards the island, off which it extends. When aground on this bank, a small islet, in a bay on Lantoa, bore N. 63° E., touching the western point of the bay in which it is situated; south point of Lantoa N. 66° W., distant about 2 miles. There is a rocky islet and two rocks above water, between the two Achow Islands, nearest to the S.W. point of the northern one, but they are not in the way of ships passing; there is also a high rocky islet lying nearly a mile to the eastward of the Southern Achow, which may be passed at half a mile to the southward: but the ground is foul between it and Achow, in 7 fathoms water, and by ships entering the Lantoa Passage must be left to the northward.

Northern Achow Island.

Lantoa Passage.

THE LANTOA PASSAGE is formed by Lantoa Island to the N. E., and the Lueng-Suitow group to the S.W.; the eastern entrance, formed between the islands Chi-chow to the southward, and Achow to the northward, is often adopted by ships arriving during the North-east Monsoon. From about one mile off Pootoy Island in the Lema Channel, a ship's course towards Lantoa Passage is nearly West 20 miles; in this run she will pass to the northward of Lin-ting† Island and to the southward of Lamma, decreasing the depth of water from 17 fathoms off Pootoy, to 12 and 13 after passing Lin-ting a short way; then to 7 or 8 as she approaches the Lantoa Passage; and when in the entrance she will have 12 fathoms in mid-channel, but by keeping nearest to Achow will have 7 or 8 fathoms. In the night it will be proper not to come nearer Lin-ting than $1\frac{1}{2}$ miles when passing, as there are two *small rocks* above water, the outer one bearing E. N. E. from the north end of Lin-ting, distant three-quarters of a mile, the other lies S. by W. from this about one-third of a mile; with depths near them of 13 fathoms.

Coming from eastward, Chi-chow has a remarkable appearance, and is a good guide; it appears like a high, round, detached island, with distant rugged land to the westward of it, which is Laff-Sammee and Lueng-Suitow. Having entered Lantoa Passage from eastward, the course through is N.W. by W., and the depth will be variable, not under 8 or 9 fathoms, or above 25 fathoms; this inequality may be owing to the ebb tide running in strong eddies, particularly in July or August, when its velocity is sometimes $4\frac{1}{2}$ knots per hour on spring tides. With a light breeze, at times, it is very difficult to manage a ship hereabout; on some occasions two or three boats, assisted by the sails, have been baffled in their attempts to tow a ship's head round.

Channel to the northward of Achow Island.

The generality of pilots speak of a danger said to be in this passage, but few of them can point out where it is. "I have passed over most part of the ground," says Captain Ross, "and know of no danger existing in the channel, but the spit of sand that runs

* Called Socko-chow by some navigators. † Called also Ling-ting.

off the west side of the northern Achow Island." I have been twice aground on this sand: if it is necessary to turn through the passage, when standing to the northward do not decrease your depth under 7 fathoms, in a large ship, nor pass the line of bearing between the south points of Lantoa and the southern Achow Island. There is a good channel, one mile wide, between the northern Achow Island and Lantoa shore, which may be adopted by a ship when blowing fresh from North; in this case, instead of passing nearest to Lin-ting when coming from eastward, you should pass nearest to the south point of Lamma in 12 fathoms, then to the south point of Chung-chow in 8 fathoms; also pass another high island that is to the westward of Chung-chow in 7 fathoms, afterwards between Lantoa shore and the northern Achow Island, carrying 7 fathoms water. In this run, after passing the island that is a short distance to the westward of Chung-chow, you will perceive a *small rocky islet* in a bay, on the northern shore; you may stand through the channel steering West, until the islet is shut in behind the western point of the bay in which it is situated, when you may keep towards the south point of Lantoa, and have $4\frac{1}{2}$ fathoms, muddy ground, between the point of the sandy spit and Lantoa shore. It is high water on full and change of moon at 10 hours, off the south point of Lantoa.

Lantoa Island. LANTOA, or TY-HO, extends in a N. E. by E. and S.W. by W. direction 15 miles, and its greatest breadth is about $5\frac{1}{2}$ miles; the south or south-west point is in lat. 35° 12′ N., lon. 113° 50′ E., the north-east point in lat. 22° 21′ N., lon. 114° 2′ 22″ E. The only fortification perceived on the island was a small fort on a hill a little way to the eastward of the south point. On the western side, $1\frac{1}{4}$ miles from the south point near the shore, there is a peaked hill, which at high water is insulated; from this hill to the point there is a mud flat, extending about a third of a mile from the shore, with only two fathoms water; therefore, in passing this part do not decrease the depth under 7 fathoms, as you will shoal fast from 17 to 7 fathoms near the edge of the flat. About a mile to the N. N.W. of the peaked hill, and three-quarters of a mile off the nearest shore, there is a rock *above water*, having near it 15 fathoms: between this rock and the shore there are 7 fathoms, decreasing very quickly towards the latter; from the rock Linten Peak bears N. $\frac{1}{2}$ W., distant about $10\frac{1}{2}$ miles, and Macao W. $\frac{3}{4}$ S., distant $15\frac{3}{4}$ miles. From the rock N. E. by N. $1\frac{1}{4}$ miles there is a bluff point, and to the eastward of the latter a bay, in which is the village Ty-ho, where is a creek or rivulet into which a boat may go at high water. To the southward of Ty-ho village there are two bays, both of which are shoal, but fresh water may be procured in them. Between the Dry Rock and the Bluff Point, in 7 fathoms water, Captain Ross rode out a severe Ty-foong, July 28th, 1811, with yards and top-masts struck, and did not experience any swell, nor had occasion to veer out more than two-thirds of a cable, whilst H.M.S. Clorinde, in Macao Road, experienced very rough riding: this Ty-foong did much damage to the quay round the Praya Grande, and otherwise much injured Macao: although very severe, it must have been confined to a small space, as a ship arrived the day after it broke up, and had not experienced any bad weather.

On the north side Lantoa there are two projecting points; from the western one Lintin Peak bears N.W. $\frac{3}{4}$ N., and the island Saw-chow N. $\frac{1}{2}$ W., distant $2\frac{3}{4}$ miles; between the two points, which are three-quarters of a mile separated, there is a bay and the village Saw-lowang; and directly fronting the eastern point of the bay lies a small island, about a quarter of a mile distant, having a rock at the water's edge, a little way to the northward of it. Between this island and Saw-chow, distant 2 miles N. N.W.,

the depth is too small for a large ship at low tide; towards Saw-chow is the deepest water, $3\frac{3}{4}$ and 4 fathoms, shoaling near the Lantoa shore to 3 and $2\frac{3}{4}$ fathoms, on a soft mud bottom. Eastward of the small island off Saw-lowang Bay another deep bay is formed by an island extending North and South $1\frac{3}{4}$ miles; in this bay is situated Toong-choong village, the place where the Portuguese ships attacked the piratical fleet in 1809. The N. E. point of the island has a remarkable rocky appearance, and is frequented by a company of stone-cutters, who cut the granite rocks into slabs for building; Chee-lap-cock is the name of its north-east point. The south point of this island is so near to the Lantoa shore, that in passing you cannot distinguish it to be an island; in Toong-choong Bay the water is shoal, being only 2 and $2\frac{1}{2}$ fathoms. The northern shore of Lantoa from Toong-choong Bay is not inhabited, and there is little water near the island aforementioned.

About $1\frac{1}{3}$ miles E. N. E. of Chee-lap-cock Point lies a small green island, and three-quarters of a mile farther E. N. E. another small island, which are the Brothers of Mr. Dalrymple, or Motoe of the Chinese: there is a rock above water, about half a mile southward of the eastern island, and about a mile off the Lantoa shore. The depths near the Brothers are 7 and 8 fathoms, shoaling from the north one towards the northern shore into 4 or 5 fathoms, making the channel narrow hereabouts: there is a small reef round the western side of the West Brother. According to Captain H. Smith, of H.M.S. Druid, there is a good channel with 8 or 10 fathoms water between the eastern Brother and the large rock to the southward of it; the rock is high above water, and bold on all sides. From the eastern Brother the N. E. point of Lantoa bears E. by N. $4\frac{1}{2}$ miles.

About half a mile N. E. of the north point of Lantoa lies Mah-wan Island, forming a passage between it and Lantoa, and another to the northward between it and the northern shore. The depth in them is from 20 to 25 fathoms, and in the northern passage *some rocks* project off the north-east point of Mah-wan Island about one-third of a mile. H. M. S. Doris went through between Mah-wan and Lantoa, which passage has dangerous eddies, and is very narrow. The passage between the north point of Lantoa and the main is called the Cap-sing-moon passage.

THE LAMMA CHANNELS* are the passages on either side of the island of that name. The channel on the west side of Lamma Island was sounded at low water, and not less than 5 fathoms found, over an even bottom of soft mud; it is preferable to that on the east side of Lamma, the latter being deeper, and in some places very narrow. Lamma Channels, &c.

In coming from southward, the passage by the western channel, to the anchorage on the north side Hong-kong, adopted by some of the Company's ships in 1829-30, is to steer or work up on the west side of Lamma, and then between Cowee-chow and the island off the N.W. extremity of Hong-kong. Ships ought never to pass to the westward of Cowee-chow, on account of some dangerous sunken rocks on that side. Having passed Cowee-chow, steer directly for the south point of Chung-yue, observing not to bring the island off the N.W. end of Hong-kong to the southward of S. by E. $\frac{1}{2}$ E., until close up with Chung-yue, or having the west end of Wan-chun-chow, which may be approached very close, bearing E. by N. $\frac{1}{2}$ N. With a working wind, ships may stand up into the bay formed by Chung-yue, Wan-chung-chow, and the main, taking care not to bring the west end of Wan-chung-chow to the westward of S. by E. When

* The Lamma Channels, Ly-ee-moon Anchorage, and Cap-sing-moon Passages, were surveyed by Captain Blakely, of the Waterloo, in 1829, and are given in my Chart of Canton River and proximate channels.

close to the west end of this island, steer about S. E. or for the foot of the high ridge on Hong-kong, or a little to the southward of Ly-ee-moon Point, both of which marks may be readily seen. The lead is a good guide in working for this part of the channel, which is about 1 to $1\frac{1}{3}$ miles wide. The shoal projecting off the island at the N.W. end of Hong-kong seems not to have less than $3\frac{3}{4}$ fathoms at low water spring tides, the bottom soft mud. The tides about Hong-kong are irregular, flowing and ebbing without any apparent change of direction at the surface, and sometimes there seems to be only one tide in 24 hours. There are many safe anchoring places, sheltered in the North-east Monsoon; but fresh water is not easily got, except on Hong-kong.

Tides.

Anchorages.

Cap-sing-moon Passage.

THE CAP-SING-MOON* PASSAGE is formed between the north point of Lantoa and the main, and is separated into two branches by Mah-wan Island. That branch on the west side of Mah-wan Isle, being extremely narrow, and very dangerous, ought never to be used by ships of any class; more particularly, as the passage northward of that isle is wider, with good anchorage, a regular tide, and the advantage in the North-east Monsoon of being to windward. Coming through Cap-sing-moon Passage from the westward, in proceeding to Ly-ee-moon anchorage, keep close to the main land to avoid the reef off the N. E. part of Mah-wan, then keep close to the western side and south end of Chung-yue, and steer directly for the west end of Wan-chung-chow, observing, with a working wind, to follow the directions given above.

The southern coast of Lantoa Island forms two large bays with shoal water in them; the larger and eastern one lies to the north-eastward of the northern Achow Island, and has in it a small islet, and some rocks above water. The depth is 2 fathoms within the rocks, and 4 and 5 fathoms in the entrance of the bay, where there appears to be good anchorage: there is a considerable village in this bay. The western bay, which lies N. N.W. of the northern Achow Island, is less capacious than the one just mentioned, and has depths in it from 2 to 5 fathoms. Off the eastern entrance point of the eastern bay, separated from it by a narrow channel, there is a high green island, which bears from Lin-ting Island N. N.W. $\frac{1}{2}$ W., distant $5\frac{1}{2}$ miles, and close on the west side the island lie some rocks above water; a small ship would find good anchorage by running round to the westward of these rocks, and anchoring with them bearing about S. by E., three-quarters of a mile distant, in 5 fathoms water; fresh water may be procured at the sandy beaches on Lantoa, to the northward. In the channel formed between Lantoa and the high green island there are 7 fathoms water; the ebb tide here runs to the eastward.

Lantoa West Peak.

About the centre of Lantoa the land is very high, making in peaks, the highest and westernmost of which, about 3,000 feet high, is in lat. 22° 15′ 15″ N., lon. 113° 54′ 15″ E., and bears from Macao E. by N., distant 21 miles.

Saw-chow Island.

SAW-CHOW, or SAW-CHOO, in lat. 22° 21′ N., bearing S. E. from the east side of Lintin, distant 5 miles, is a small island one mile long and narrow, with a sharp hummock on its north end: to the northward of Saw-chow, about one mile distant, there is another island, higher, and more rocky in its appearance, named Toon-koo, or Toon-quoo: and to the S.W. of the south point of Toon-quoo, and N.W. of the north point of Saw-chow, there are two *rocks above water*, about a mile distant from each island: the western rock is very white, and named Pauk-pyah. The depths on the

Toon-koo Island.

Pauk-pyah Rocks.

* Cap-sing-moon Passage, or Throat Gates.

eastern side of Saw-chow and Toon-koo are from 5 to 7 fathoms, and immediately from the south point of the latter to the north point of the former the depth is only $2\frac{1}{2}$ fathoms at low water; to the westward of Toon-koo, the depth is 6 fathoms, and near the rocks there are 5 fathoms: the channel between Pauk-pyah and the east side of Lintin Spit, or South Sand, is 3 miles wide, with 7 and 8 fathoms, decreasing towards the spit to 5 fathoms. If working to the northward between Lintin Spit and Pauk-pyah Rock, do not stand so far West as to shoal to 5 fathoms, or to bring the east side of Lintin to bear North. With the Peak of Lintin bearing North, and Saw-chow East, there are $2\frac{1}{2}$ fathoms on the spit. With Saw-chow bearing E. N. E. and Lintin Peak North, you will cross the spit 5 miles from Lintin, in $4\frac{3}{4}$ or 5 fathoms, sand and mud. Lintin Spit.

URMSTON BAY, or TOON-KOO HARBOUR, lying near the entrance of Canton River, and bounded by the Islands Toon-koo and Saw-chow to the West, and Castle Peak land to the East, is a safe anchorage, tolerably sheltered from all winds. The best anchorage is in about 8 or 9 fathoms, with the Peak of Toon-koo just open with the south end of Lintin, and nearer to the main island than to Toon-koo. This safe bay or harbour was named Urmston Bay by the captains of the fleet who anchored there in August and September, 1823, at the recommendation of Sir James Brabazon Urmston, President of the Company's Factory at Canton, during the discussion with the Chinese, relative to the affair of the Topaze frigate, in 1821-2, at Lintin; the anchorage was found secure, with smooth water when it blew a gale from eastward. Fresh water was also procured in abundance. Urmston Bay.

The proper channel into Urmston Bay, which is to the northward of Toon-koo, has 7 and 8 fathoms water; and the approach to it, in coming from southward, may be either between Lintin South Sand and the islands of Saw-chow and Toon-koo; or if coming from the northward on the north side of Lintin, the channel to the southward of Saw-chow, leading into Urmston Bay, has only from $3\frac{1}{4}$ to $4\frac{1}{2}$ fathoms water, and between Saw-chow and Toon-koo, the depth is only $2\frac{1}{2}$ fathoms, rendering that passage unsafe for ships.

Having described the islands and channels to the eastward of Macao Road, it is necessary to return to those in the offing.

THE HAE-PONG,* or KY-POONG ISLAND, has near its western extreme, two high remarkable peaks, called the ASSES EARS, which make it easily known; they rise from the same base almost perpendicularly from the sea, and sloping suddenly down on the N. E. side, are united to a piece of moderately elevated land, which terminates that part of the island. The Asses Ears are in lat. 21° 54′ N., lon. 114° 1′ E., bearing from the Grand Ladrone E. by S. 17 miles. Yung-gae, or Young-hoy (Mugwort Island), is an island of considerable size, separated from the west point of Hae-pong by a small channel about a quarter of a mile wide; and a range of islets projects from Yung-gae about 5 miles S. Westward; the outermost of these, sometimes called Gap Rock, but Man-mee-chow† by the Chinese, has a small gap in it, and is the south-westernmost islet on the coast, to the eastward of Canton River. Between the south end of Yung-gae and the Man-mee-chow group there is a passage of $1\frac{1}{2}$ miles width, with 22 fathoms water; but care is required to avoid a sunken rock about $1\frac{1}{2}$ miles Adjoining islets.

* The east part of the island only is called Hae-pong, *the Shoe's Side;* the other part of the island is called Pak-tseem-mee, *the North Side.*

† *i. e.* Paps Islet.

N.W. ½ W. from the south end of Yung-gae, by keeping nearest to the north islet of the group in passing the danger. In the passage betwixt this islet and the other nearest to it, and which is about a quarter of a mile wide, there are 22 fathoms water. There is also, between Man-mee-chow and the other islets of this group, an opening a mile wide, safe to pass through with a steady wind, with from 16 to 18 fathoms water; the Gunjavar passing through it in 1802 had 17 and 18 fathoms, mud.

KWEI-TOW-PAE, or TORTOISE HEAD, about three-quarters of a mile off the east point of Hae-pong, is a white rocky islet, having other rocks between it and the point, neither of which ought to be approached. GAE-UNE-CHOW, or the Moxa Pill, is another islet, rather more than a mile to the northward of the north end of Hae-pong: there is said to be a passage between it and the latter, which ought not to be attempted unless from necessity; for there appear to exist some straggling rocks on which the sea breaks at times, and the passage has not been surveyed. The following danger requires the greatest care in ships passing through the channel between the westernmost Lema Islands and these rocks.

Cambridge Rock.

THE CAMBRIDGE ROCK, on which the ship of this name struck, August 30th, 1820, in passing between Hae-pong and the Lema Islands, is a spiral rock with only 17 feet water on it, deepening quick to 5, 6, 7, and 11 fathoms at a small distance; from 20 to 23 fathoms are the usual depths in the channel, between the rock and the S.W. point of the Lema Islands, which is about 2¾ miles in breadth, and safe, by borrowing towards the latter islands in passing through.

This rock is called by the Chinese fishermen HOE-SING-PAE, or Heart of the Sea; it was carefully examined in August, 1822, by the late Mr. Robarts, of the Company's factory, Canton, who found its summit only 1½ or 2 feet in diameter, with 2¾ fathoms water over it, and 4 or 5 fathoms on the other rocks by which it is surrounded; from whence the depths increase to 6, 8, 10, 12, 14, and on to 20 and 23 fathoms, in the fair channel between the rock and the Lema Islands.

Position.

This dangerous rock lies in lat. 21° 57′ N., lon. 114° 4½ E., and is on a transit line between the S. Westernmost Lema Island, called Tae-tam-mee, and the rocky islet to the northward of Hae-pong, called Gae-une-chow, the latter islet bearing from Cambridge Rock W. S.W., and the former E. N. E. The small islet off the eastern point of the Asses Ears, called Kwei-tow-pae, bears from it S. by E., the north point of Hae-pong Island S.W. ½ W., and the west point of the Lema Island Sei-tam-mee (called E-Chow in Captain Ross's chart) bears from the rock N. E.

The west end of Lantoa on with the west end of Hack-chow, the northernmost of the Sam-moon Islands, is a transit or direct line with the rock; therefore, in passing it, keep the west point of Lantoa shut in with the end of Hack-chow; and when you are clear to the northward of the rock, the north point of Gae-une-chow will be in a transit line with the north end of the islet Man-mee-chow, which is situated to the westward of Yung-gae.

Tong-hou Island, and Cove.

TONG-HOU, bearing N. N. E., distant about 2½ miles from the Little Ladrone, and North from the channel that separates the two Ladrones, is of moderate and unequal height, nearly two miles long N.W. and S. E.: on the N. E. part of this Island there is a small cove, not readily distinguished if passing 2 or 3 miles from its entrance. There is a sunken rock off the N.W. point of the cove, and when passing this part of the island it will be avoided by keeping about three-quarters of a mile off shore.

Close off the west point of Tong-hou, and near the south point of Leung-neeb Island, there is a *small round island*, making the passage on each side of it very narrow : the depth about half a mile off the north side of Tong-hou is 7 or 8 fathoms.

The Boddam, after being disabled during a Ty-foong, by the loss of her masts and rudder, and having fixed temporary ones, was proceeding towards the river, when the pilot perceiving another Ty-foong coming on, ran her into Tong-hou Cove. She drew 21½ feet water, and remained in perfect safety during a violent storm. The cove is about 400 yards wide, with 24 feet water in the entrance, 17 and 18 feet well inside, at low water spring tides, the bottom all soft mud. Here a ship may lie with a kedge anchor, or if she has none, be run into the mud without any risk; the tide rises 9 feet, Tides. high water about 6 hours on full and change of moon : outside the flood sets N.W., and the ebb S. E. pretty strong, but there is scarcely a drain in the cove. On each side the land is steep from the water's edge, terminating in a valley at the head of the cove, where is a sandy beach and plantain trees. Being the chief rendezvous of the fishing boats in bad weather, or a place of refuge from the Ladrones, it is protected by a fort on the N.W. point of the entrance. The rocks that lie along the N.W. side of the cove have 12 feet, mud, within 3 or 4 yards of them. Good water may be got, also beef, fish, poultry, and some fruit.

To sail into the cove. In steering for the entrance of this cove, a sunken rock which lies in about 6 fathoms water, and 1½ cables' length to the N. Eastward of the Fort Point, must have a berth; when the head of the cove bears S.W. by W., the rock will be left to the N. Westward. Having brought the cove fairly open, bearing S.W. by W., steer for the point on the S. E. side of the entrance, and pass it within half a cable's length; for the N.W. point, where the fort is built, is encompassed by rocks. About 2 or 3 cables' lengths to the S. E. of the entrance to the cove there is also a reef of rocks, which projects between 1 and 2 cables' lengths from the S. E. part of the island; these are mostly all in sight at high water, consequently are easily avoided, by steering from the offing directly for the S.E. point of the entrance, as directed above.

From the entrance of Tong-hou Cove, I-chow and Sam-moon Islands are in one, bearing E. 2° N. to E. 7° N., Lin-ting from E. 10° N. to E. 15° N., Lantoa Peak N. 40° E., Lintin Peak N. 12° E., Sam-cock N. 2° W. to N. 8° W., Ty-lock-chow N. 11° W. to N. 18° W., Macao N. 40° W., distant 5 or 6 leagues.

Pak-leak-low. PAK-LEAK-LOW,* lying N. E. by N. of the Grand Ladrone about 1½ miles, is of irregular shape, and on the southern side the hills are much covered by black rocks; on the east side of this island and fronting a small island named Hoa-ack-chow, there is a cove where the fishing boats find shelter; on the northern side are some small bays, in which fresh water may be procured; and near the N. E. point of the island there is a rocky islet, on which the fishermen have a hut and a fishing stage erected. On the N. E. point of the island stands a remarkable hill, which is visible from Macao nearly on with Cabaretta Point. To the southward, between Pak-leak-low and the Grand Ladrone, the depth is 15 fathoms, and the channel between it and Tong-hou Island is nearly 4¼ miles broad, with 10 fathoms between the two points, shoaling to 7½ as you proceed to the northward : from 7 fathoms about three-quarters of a mile off the north side the island, you will increase the depth towards the shore to 12 or 13 fathoms, and near the small islet which is off the N. E. point you will have 15 fathoms water to the northward and eastward.

* Called also Poo-toy.

Hoa-ock-chow.

HOA-OCK-CHOW is a small island, lying about three-quarters of a mile from the east side of Pak-leak-low, with 15 and 16 fathoms water around.

Chook-chow.

About E. by N. from the centre of Pak-leak-low at the distance of 1½ miles from that island, lie the GREAT and LITTLE CHOOK-CHOW. The larger island, which is the eastern one, has a high rocky islet off its S. E. point, and a small bay on its north side; there are 15 fathoms water between Hoa-ock-chow and the western island, and 11 and 12 to the northward of the group; from the N.E. point of Chook-chow, Macao Town bears N.W. ¾ W., distant 10½ miles, and on a clear day may be distinguished just clear of Cabaretta Point: from the east point of Chook-chow, the small and southernmost islet or rock, Man-mee-chow, bears S. S. E. ½ E., distant 12½ miles; the *white rock* that is in the channel between the Lemas and Hai-pong bears E. by S. ½ S., distant 13 miles, and the peak of the western I-chow Island N. E. by E. ¼ E., distant 4½ miles.

Two White Rocks.

There are TWO HIGH WHITE ROCKS lying about 4 miles North of little Chook-chow, which are separated from each other half a mile; the southern one is in lat. 22° 4′ 40″ N., from which the following *true* bearings and distances were obtained. North-east point of Chook-chow S. 25¼° E., distant 4½ miles; peak or highest part of Tailo-chow N. 73° W., distant nearly 6 miles; north point of Leung-neeb Island S. 80° W., distant 6 miles; southern part of eastern Chi-chow Island N. 63¼° E., distant 5½ miles; western I-chow Island S. 72½° E., distant 6 miles. About three-quarters of a mile S. E. of the Southern Rock there is a SMALL BLACK ROCK, visible only at low spring tides, having 10 fathoms water close around; between the two high rocks, but a little more westerly, there is a *smaller one* above water; the depth near these rocks on the east side is 9 or 10 fathoms, on the western and northern sides 8 fathoms. If coming from south-eastward between Chook-chow and I-chow, these rocks may be avoided in the night, by keeping about a mile or two off Chook-chow; in fine weather you will see the rocks time enough to go clear of them. In the space between Chook-chow and the rocks, the soundings are from 10 to 13 fathoms, deepest near the former; and between them and the south end of Laff-sammee, which is distant 2½ miles to the northward, there are 8 and 9 fathoms water.

Sunken Rock.

I-chow.

I-CHOW consists of two islands, the eastern or largest of which is in lat. 22° 3′ N., lon. 113° 54′ 45″ E., the smaller one being separated from its west side by a very narrow channel, which you can only distinguish when to the southward of them; the depth on the southern side of these islands is 15 fathoms, and on the north and east sides 12 and 13 fathoms, on the west side 8 or 9 fathoms. The peaked or highest part of the eastern island bears N.W. ½ W., distant 10 miles from the white rock Gae-une-chow, to the northward of Hae-pong. To the N. N. E., distant 1½ miles from the northern part of the eastern I-chow, there is a *small rocky islet*, with 12 and 13 fathoms water at a short distance from the rocks that are round it.

Sam-moon Islands.

THE SAM-MOON ISLANDS, or Three Gates, are a group of three small islands extending about 3½ miles in a N.W. and S.E. direction, with narrow passages between them. Near the N.W. part of the north-westernmost, which is called Hack-chow, there are two peaked islets, and on the northern side, between the eastern and middle islands, there is another high rocky islet, with a bed of rocks lying to the southward of it; the south end of the eastern island is the highest part of the group, and forms a round mount. These islands are to the N.W. of the channel, formed

between the Lemas and Cambridge Rock, Hack-chow bearing about E. by N. ½ N., 2½ miles from I-chow.

You may pass to the southward of them, or to the northward between them and Lin-ting Island, in 12 fathoms water.

LIN-TING,* or LING-TING ISLAND, in lat. 22° 6′ N., lon. 114° 1′ 30″ E., bearing W. ¾ N., distant 15¾ miles from the north end of the Lema Island, is of rugged appearance, about 1¼ miles in diameter, rising to a peak about its centre; the dangers near this island, already mentioned, are two rocks above water, about three-quarters of a mile to the eastward of the N. E. point; they bear N. by E. and S. by W. of each other a quarter of a mile, with 13 fathoms water near, but foul ground between them. Lin-ting Island.

The NEEDLE ROCKS are two in number, lying within a few yards of each other, bearing S.W. ½ S. from the low rocky N.W. extreme of Lin-ting Island, and are so sharp, that it is difficult to keep the lead fixed on their points; at low spring tides, there are about 6 feet water on them, at which time, with a swell, they may probably shew either breakers or a rippling. H. M. S. Doris, having got on these rocks, and reported their distance to be half a mile off the shore, induced Captain Ross to examine them; from the outer rocks he found the southern extreme of the Lemas was just shut in behind the S.W. point of Lin-ting, and the highest part of Lamma a very little way over the low N.W. point; the distance carefully measured was 1½ tenths of a mile, or 1½ cables' length from the low N.W. point of Lin-ting, and there are 10 fathoms water close around the rocks. A ship will avoid them when passing round Lin-ting to the westward, by keeping the southern extreme of the Lemas a little open of the S.W. of Lin-ting, and should not go within half a mile of the low rocky point of the latter. From the north point of Lin-ting Island the south point of Lamma Island bears N.E., distant 5¾ miles, and the east entrance of the Lantoa Passage W. by N., distant about 8 miles: the depths close to the north point of Lin-ting are 18 or 19 fathoms, decreasing to 14 and 15 about a mile distant, and to the southward and westward of the island, there are 10, 11, and 12 fathoms water on a soft bottom; in the night, when passing this island to the northward, it is advisable to keep 1 or 2 miles off, on account of two rocks above water, the northern one of which bears from the brow of Lin-ting north point E. by N. ½ N., and the southern one E. ¼ S. Needle Rocks.

CHUNG-CHOW, distant 5 miles N. ½ W. from Lin-ting Island, and lying near the S. E. part of Lantoa, is rather high on the north and south sides, and having a bay on the east and west sides; the island is low and narrow in the middle, and in this low part there was formerly a considerable village, where a number of boat-builders resided, to make or repair fishing boats: this village, with its inhabitants, was destroyed by the pirates. Nearly half a mile East of the eastern point of the island, lies a small rock, covered at times, the depth nearest to it 7 or 8 fathoms. In an easterly gale, a small ship, by running round to the westward of Chung-chow, and anchoring in the western bay in 3¼ fathoms, will be well sheltered: there is no danger in passing the south point of this island, there being 8 fathoms water close along the shore, and 5 and 6 near the western part. Fresh water may be procured at the western bay. Chung-chow.

From Chung-chow to the northward, and lying at a short distance from the Lantoa shore, there are *several small islands* with *some rocks above water;* the channels between which and the Lantoa shore, are narrow, shoal, and unfit for ships. Islands near the eastern part of Lantoa.

* Signifying isolated, or standing alone.

Lamma Island.

LAMMA ISLAND, lying off the S.W. side of Hong-Kong $5\frac{3}{4}$ miles N. E. of Ling-ting Island, is of rocky appearance: the S.W. point is in lat. 22° 11′ N., from which point the land extends in a N. E. direction about $3\frac{1}{4}$ miles, and is higher hereabout than on any other part of the island. The middle of Lamma is narrowed by a deep cove on its N. E. side, and a bay on its S.W. side, so that between them the land is not more than a quarter of a mile broad. The north end of the island is in lat. 22° 15′ N., and is not more than a mile distant from the S.W. part of Hong-Kong. From the S.W. point, along the western shore, the land forms a bay to a low projecting point, about $2\frac{1}{2}$ miles to the N. N.W., and from this last point about $1\frac{1}{4}$ miles to the N. E. there is another point, off which lie some *rocks under water* half a mile off shore; between these two points some houses and cultivation are seen in the little bays. The point off which the rocks are situated is of rocky appearance, rather bluff, with houses in the bays to the southward of it and the low north point of the island, extending to the north-eastward of it.

Sunken Rocks.

The S. E. point of Lamma Island is remarkable from its being a small round hummock, of bright green appearance on the top, and very rocky near the water's edge; this part of the island, as far as the N. E. point, is rocky close to the shore, with 13 or 14 fathoms water half a mile off.

Shelter and safe anchorage.

On the N. E. side of Lamma Island, a little way to the westward of its N. E. point, there is a cove, about $1\frac{1}{4}$ miles deep and two-thirds of a mile wide, the bottom of which is rocky; but a ship may go into 6 or 7 fathoms water about three-quarters of a mile in, and ride in security, being land-locked. There is an island nearly 2 miles from the N. E. point, close to the western point of the cove, and the channel between this island and Hong-Kong is a mile wide. You may anchor in a good situation between the island and north point of Lamma, in 7 or 8 fathoms water, and be sheltered from all winds; the few inhabitants of this island were very civil, when Captain Ross visited their habitations. On the north point of the island there is a hut and a winch erected by the fishermen, who will dispose of fish at times.

In the channel between Lamma Island and the southern side of Hong-Kong the depth of water is from 14 to 19 fathoms in mid-channel, having no dangers in it but what may be seen, namely, a rock and a small island above water, lying close to the mouth of a cove on Hong-Kong.

On the western side of Lamma, between it and the islands lying off the east side of Lantoa, the depth is generally 5 fathoms on a mud bottom, and when coming from between Lamma and Hong-Kong you will decrease very rapidly to $5\frac{1}{2}$ fathoms after passing round the north point of the former.

Hong-Kong Island, southern side.

HONG-KONG is a large island, lying between Lamma and the main; the N.W. point, in lat. 22° 17′ N., bears from the north point of Lamma nearly North, distant 2 miles; a short distance N.W. of the point there are two small islands, of green appearance, the westernmost of which is highest; and $1\frac{3}{4}$ miles farther to the westward of this last-mentioned island there is another high green island, named Cow-ee-chow, forming between them the Cow-ee Passage, having in it 10 and 12 fathoms water.

The south point of Hong-Kong, which is the western entrance point of Tytam Bay, is in lat. 22° 12′ N., lon. 114° 13′ E.: between this point and the N.W. end of the island there are several small bays, all of which are safe for small ships, but would seldom be resorted to, when there are much better places of shelter near them. About a mile E. N. E. of the N. E. point of Lamma, and within half a mile of the Hong-Kong shore, there is a small but high island, of bright green appearance, between which,

you will have 13 and 15 fathoms water, and 20 fathoms very close to the eastward of Lamma point: in the small bays of Hong-Kong, northward of the green island, the depth is generally 7 or 8 fathoms, and fresh water may be procured at the beaches.

About a mile N. E. by E. of the north point of Lamma Island, and near the western point of a deep cove on Hong-Kong, there is a cascade of very good water, conveniently obtained: a short way S. E. of the cascade, directly opposite the mouth or entrance into the cove, is Lo-chow, a small rocky island, with a *bed of dry rocks* near it: to the S. E. of the island, the depth near it and the rocks is 12 or 13 fathoms; the cove, in which you have 7 and 8 fathoms water, may be useful to careen in. About the southern side of Hong-Kong Island a ship could procure very clean and good shingle ballast, and no doubt the fishermen might be engaged to bring it off to her, so as to ballast her in one or two days.

Tytam Harbour, or Bay, called also Hong-Kong Harbour, is a deep islet which divides the south part of Hong-Kong into two prongs; the western entrance point bears N. E. by E. $\frac{1}{2}$ E. from the north point of Ling-ting, distant 11 miles, and is $1\frac{3}{4}$ miles N. N.W. of the dry rock off the western side of Lo-chow; the point is high and bluff, with 13 or 14 fathoms water near it: from this point, the land to the westward extends in a northerly direction, and forms a small bay, in which is the town, or village, of Tytam. The harbour is to the eastward of the point, from which the land stretches nearly North three-quarters of a mile to a small sandy bay, with a Rocky Islet fronting the beach; about three-quarters of a mile to the northward of the islet, the land forms a round projecting point, to the northward of which is a larger bay, with a sandy beach, forming the western side of the harbour; in this bay you may obtain fresh water, and be at a short distance from Tytam Village. The eastern side of Tytam Harbour is formed by the S. E. point of Hong-Kong Island, off which there are two green hummocks or islets, about $1\frac{3}{4}$ miles to the northward of Lo-chow. The harbour is a mile wide; its eastern shore trending N. by W. about 2 miles, and terminating in the two coves which form the head of the harbour: the cove to the N.W. is shoal and rocky, and has a rivulet of fresh water; which, however, is not to be procured without inconvenience when the tide is low. Tytam Harbour is free from danger, and the depth is 6 or 7 fathoms well in. Tytam Harbour.

If you are to the eastward of Waglan with the wind from eastward, and wish to proceed to Tytam Harbour, you may either pass to the northward of Waglan, Soon-koo, and Lo-chow Islands, through the *Sing-shee-moon Passage*, or to the southward of these islands into the *Lema Channel*, then round the *dry rocks* that lie to the westward of Lo-chow. But the passage to the northward of the islands, being the shortest route, is preferable, and after opening the harbour, you may haul to the northward in what berth you think proper; whereas, by going round to the southward, if the wind be northerly, it is probable you may have to turn in. If you adopt the Sing-shee-moon Passage, pass Waglan and Soon-koo at about half or three-quarters of a mile to the northward, and steer for the channel, which you will perceive to the westward, formed by the high Island of Lo-chow to the southward, and by the two green islets off the S. E. point of Hong-Kong to the northward: in this track you will carry 17 and 16 fathoms from Waglan, and by keeping in mid-channel will have 27 and 30 fathoms water, deepening as you near Lo-chow, and shoaling to 12 or 13 fathoms as you near the islets; you will decrease the depth very fast to 10 or 11 fathoms when about 1 or $1\frac{1}{2}$ miles to the westward of the two islets, and will then have the harbour open to the northward of you, and may steer up in the middle of it. In a large ship, anchor in 7 or $6\frac{1}{2}$ fathoms, one mile to the N. N. E. of the small rocky islet, which you will see on Directions for sailing into it.

the western shore: in this position you will be well sheltered from all winds, except those from South, which cannot affect you much, as the islands and rocks contiguous to the entrance prevent any swell from rolling in. This harbour would be very useful to a ship, in the event of her being near Waglan at the close of the day, with the probability of a dark and tempestuous night; by running in here, she will at any rate be snug, even if a Ty-foong should happen during the night.*

Tides. There is very little tide in the harbour, and, like all the places hereabout, it is difficult to fix the time of high water, owing to the variety of channels, and the wind greatly influencing the tides; but its rise and fall is about 7 or 8 feet on spring tides, and on the neaps not above 3 or 4 feet. A short distance to the eastward of the S.W. point of the harbour there is a small sand-bank, with 7 fathoms water on it, and 10 or 11 all round. A ship can procure very good shingle ballast in this harbour. The eastern shore is very rocky near the water side, but the rocks do not project far from it. The depth between the S.W. point of the harbour and the large rocks off Lo-chow varies from 13 fathoms off the former to 21 near the latter; the ebb tide sets through between Lo-chow and Hong-Kong to the eastward.

Pootoy Island. Off the entrance of Tytam Bay to the S. E. lies the group of islands which form the northern side of the Lema Channel; Pootoy, bearing from the N. E. end of the Great Lema Island N. N.W., distant about 6 miles, being the southern one of the group. Pootoy is of moderate height, the appearance in general barren, there being only a small quantity of brushwood in the valleys. About the western part of the island there is a cove for boats, with a small rocky islet. Near the entrance of the Lema Channel, the depth of water between Pootoy and the north end of the Lemas is 16 and 17 fathoms, increasing to 18 nearest to the latter.

Lo-chow. LO-CHOW, lying to the northward of Pootoy, and separated from it by a narrow channel, is a high island flattened at top, very steep all round; about its N. Western brow there is a small peak, with a few large and remarkable rocks on it; off the west side of the island, at the distance of half a mile, are some large rocks above water, having no hidden dangers near them. Soon-koo. Soon-koo, lying to the N. E. of Pootoy, and about East $1\frac{1}{2}$ miles from Lo-chow, is a small but high island, rising in a peak towards the centre; and near the north-western part of the island there are some rocks considerably above water. Waglan. Waglan, in lat. 22° 11′ 44″ N., lon. 114° 17° 50″ E., bearing N. $\frac{1}{2}$ W. from the N. E. end of the Lemas, distant $6\frac{3}{4}$ miles, and East from Soon-koo Island nearly a mile, is a small barren rocky islet, the easternmost of this group, having 16 and 17 fathoms water at a small distance round it to the eastward.

Sing-shee-moon Channel. SING-SHEE-MOON† is the channel formed between the north part of Lo-chow Island and the S. E. point of Hong-Kong, and, although narrow, is safe, the depth near the two green hummocks being 13 or 15 fathoms, deepening to 27 fathoms in mid-channel, and 35 fathoms close to the north part of Lo-chow.

Lema Islands. THE LEMA ISLANDS‡ are the outermost of the great archipelago that fronts

* The Lady Washington, American ship, moored in this harbour, where she filled up her water, and procured some hogs, poultry, and fish. It was explored, in 1760, by Felix Mendoza, who makes the entrance to stretch North, with 12 fathoms water in it, and from 10 to 8 fathoms inside.

† Moon, in Chinese, signifies a gateway, pass, or entrance.

‡ These are the outermost islands of the great Archipelago that fronts the entrance of Canton River, as the coast and islands inside of Great Lema trend northward, forming a deep concavity about N. by E. from the east end of that island.

the entrance of Canton River. The group consists of three large and one small island, extending in an E. N. E. and W. S.W. direction $12\frac{1}{2}$ miles; the largest island, called the Great Lema by Europeans, but Tam-quoon-tow by the Chinese, is $35\frac{1}{2}$ miles East of the Grand Ladrone, its N. E. end being in lat. 22° 4′ 45″ N., lon. 114° 18′ 30″ E.; it is 6 miles long and $1\frac{1}{2}$ broad, of moderate height and undulating, separated from the middle island, named Ya-chow, by a narrow channel called Yat-moon, in which there are from 10 to 19 fathoms water; this passage, having a sunken rock in the middle of its southern entrance, lately discovered by Captain Creighton, of the ship Cordelia, ought not to be attempted by navigators. The position of this rock was not accurately ascertained, but the following is Captain Creighton's account. Tam-quoon-tow.

"Cordelia, November 14th, 1834: the current and swell setting us bodily on the land, and having the Yat-moon Passage open, steered in for it, keeping near the Great Lema to prevent being carried by the current on a small rocky islet off the north point of Yo-chow; afterwards endeavoured to steer in mid-channel, but the eddy current swept the ship into the surf that rebounded from the point of Great Lema, when at the same time a sunken rock appeared about mid-channel, upon which the ship must have been lost by following that track, as intended. Although blowing strong outside, the sails flapped to the masts as we entered the passage, which ought not to be adopted unless in a case of extreme necessity, and then the shore of Great Lema must be kept close aboard to avoid the CORDELIA ROCK." Cordelia Rock in Yat-moon Channel.

Ya-chow is the middle and highest Lema Island; from most situations it appears flat on the top; close to its N. E. part lies a small rocky islet, visible when you are to the eastward, with the Yat-moon Passage open; and other islets lie inside near its northern shore. Ya-chow.

E, or Eee-chow, called also Sei-tam-mee, or Small Cooley Pole, is the third or southern of the large islands, separated from Ya-chow by a narrow channel named Eee-moon, having 29 fathoms water in it. Eee-chow forms more in a peak than either of the other two, and has a point projecting to the westward with a hummock on it; to the southward of this point lies Tae-tam-mee, or Large Cooley Pole, a small but high island, having a narrow channel between it and the south point of Eee-moon. Tae-tam-mee forms the N. E. boundary of the channel, which has Cambridge Rock, Hae-pong Island, and the White Rocky Islets, bounding it on the western side. Tae-tam-mee is in lat. 21° 59′ N., lon. 114° 7′ East, and may be considered as the southernmost of the Lema Islands. These islands on the south side are all steep and rocky, not affording even a single bay for a boat to find shelter, and have 22 or 23 fathoms about $1\frac{1}{2}$ miles off them. On the northern sides of the islands, the depth is generally 15 or 16 fathoms close to the shore. Ships in the North-east Monsoon should endeavour to pass between the north end of Great Lema and Pootoy, which is to the northward of it; the north end when viewed from the E. N. E. forms a small peaked hummock. Notwithstanding these islands appear barren, there are a few men residing on them, preparing charcoal from small quantities of brushwood found between the rocks, which they send to Macao for sale. Fresh water may be obtained along the north side of the longest island at several places. Close to the westward of the North point, in a little cove, there is a Chinese place of worship, and about this part the Compradore's boats await ships after the end of August, when the easterly winds set in. Yat-moon and Eee-moon Passages should not be used unless in a case of emergency, or when the wind blows directly through, as they are narrow, with deep water, and have generally a strong current sweeping through them. Yat-moon is the widest, and of moderate depth, but the rock discovered by the Cordelia makes it very dangerous. From the

Eee-chow. South Lema. Yat-moon and Eee-moon Passages.

north end of the Lemas, Pedra Banca bears E. by N. $\frac{3}{4}$ N., distant 48 miles, and the island on the west side the Pratas Shoal bears S. E., distant 114 miles: from the northern side of the Lema Passage your course is about West to pass to the northward of Ling-ting, when bound towards the Lantoa Passage.

Lema Channel. THE LEMA CHANNEL, formed by the Lema Islands on the South, and by the Pootoy group on the North, is about 2 leagues wide and very safe, with generally from 17 to 19 fathoms regular soundings, and soft bottom. This channel should, if possible, be always adopted by ships bound to Canton River in the North-east Monsoon, to effect which they ought to make the Great Lema bearing to the westward. If the weather be thick, and the wind blow strong at East or S.E., it may be proper to heave to, when land cannot be discerned above 1 or 2 leagues,* and to keep in 19 to 20 fathoms, as near as possible, which are the depths close to the east point of the Great Lema, and at the entrance of the channel generally 18 fathoms. If the severity of the weather do not permit a ship to enter the channel, she should not shoal under 25 or 26 fathoms; in these depths she will drift clear outside all the islands.

Directions.

aution.

If, however, a ship should happen to be near the entrance of the Lema Channel in the evening, and from the *falling of the mercury* in the barometer, or by the appearance of the weather, a Ty-foong be apprehended, she should run inmediately for shelter into Tytam Harbour, or into the Ta-thong-moon Passage, or into the channel between Lamma and Hong-Kong Islands, as may be most convenient; in either of which she will be completely secured from a tempest, if she gain anchorage before night, in one of these havens.

After August, it is advisable to steer for the Lema Channel, unless you carry a strong S.W. or southerly gale, close up to the islands; in this case you may steer direct for the Grand Ladrone, and proceed through the Great Western Channel for Macao Road: but with easterly or variable winds the Lema Channel is preferable. Here the risk of being horsed to the westward by the freshes setting out of the western channel is avoided, and a northerly wind will carry you to Macao Road; which is adverse, if bound in by the western channel.†

During the S.W. or westerly winds, a ship will sometimes find it very difficult to enter this passage from the eastward, by turning through, as there is generally a set from West to East, occasioned by the ebb coming from the westward out of the numerous channels, and the flood coming in from the S.W.; if it blow strong at S.W. the velocity of the current is about $1\frac{1}{2}$ knots per hour to the eastward, only slacking a little when it ought to change its direction.

Directions for the Lema Channel. To sail through the Lema Channel towards Canton River, after having entered it, the course is West to the Lantoa Passage, if you pass on the north side of Ling-ting,

* The Nautilus, of Calcutta, about 15th September, 1802, made Pedra Branca, and after running to the westward, hove to in the night, keeping in from 18 to 14 fathoms. A strong easterly gale had prevailed in the night, which increased, with thick weather, at day-light, when unfortunately they found themselves close to the east side of one of the rocky islands northward of the Lema Channel, on which the ship struck, and soon went to pieces. The only officer saved gave me this account at Canton immediately after the catastrophe.

† In the Anna, we carried a steady South-west Monsoon until within 4 leagues of the Grand Ladrone, September 11th, 1798, had then faint variable breezes: anchored in $5\frac{1}{2}$ fathoms a little above Potoe 13th; this day being *new moon*, a gale commenced at northward; veering to East and S.E., from whence it blew very severe, brought in a tremendous sea, which broke over the ship, and washed one of the anchors from the bow. With three anchors down she drove about 3 miles, from off Potoe nearly close to Montanha, and parted two of the cables before the gale moderated. The Carron made the Great Lema nearly at the same hour we did the Grand Ladrone, and by entering the Lema Channel, the first of the gale blowing from northward, enabled her to sail

which is of considerable height, terminating at the summit in a peak of regular conical form, and distant about 4 leagues W. N. W. from the western part of the Great Lema. It may be passed on either side, as the wind requires, giving a berth to the sunken rocks off its N.W. point, and to those above water off the N. E. point already described, and the usual soundings will be from 15 to 12 fathoms; but the channel to the northward of the island is preferable, for in daylight it has no hidden danger, and you may work nearly from side to side.

Having passed on the north side Ling-ting, at $1\frac{1}{2}$ or 2 miles' distance, steer West for Lantoa Passage, and conform to the directions given for sailing through it in the early part of this section.

After passing between Chi-chow and Achow, the water will deepen from 10 to 15, 16, and 17 fathoms in mid-channel, near the islands which front the S.W. point of Lantoa, and there are 7 fathoms close to this point. Having rounded the point at a moderate distance, steer to the northward for Lintin, or to the westward for Macao Road, as circumstances require; in the latter case, the depth will gradually decrease to $5\frac{1}{2}$ or 5 fathoms.

SHIPS which pass through the south channel, bounded on the east side by the Lema Islands and on the west side by the White Rocks, N.E. of Hae-pong and Cambridge Rock, may steer to the northward for Ling-ting, and pass on the south side betwixt it and Sam-moon Islands, then proceed as if they had entered by the Lema Channel. Or they may pass on the south side the Sam-moon Islands, and of I-chow, the next to the westward, then to the N.W. direct for Laff-Sammee, leaving on the left side the small Island Chuck-tu-an, which is surrounded by rocks. Having approached Laff-Sammee, they must keep within three-quarters of a mile or a mile of the west side of it, and the south part of Lueng-suitow, to avoid the 4 feet Needle Rock, between them and Sam-cock already described; then, after passing between Luengsuitow and Chung-chow, they may steer for Lintin, or for Macao Road. *To sail through the south channel.*

SHIPS entering the channel formed betwixt the Grand Ladrone and Gap Rock, or by the narrow passage between the latter and Hae-pong, may steer to northward, and proceed, as last directed, along the south sides of I-chow and the islands opposite Lantoa Point. Or if bound into Macao Road, there is a more direct passage about a mile wide, with 15 fathoms water, between Pak-leak-low and Chook-chow, then on the north side of Tong-hou and Leung-neeb, and to the southward Ty-lo-chow, which track lies nearly in a direct line towards the road. Pak-leak-low is the nearest large island to the Grand Ladrone on the N.E. side, and a little to the eastward of it there is a small island. Chook-chow, consisting of two small islands, lie more eastward, between the former and I-chow; although the channel is safe in the daytime betwixt Chook-chow and Pak-leak-low, a rock N.E. of the latter, nearly level with the water's edge, requires attention in passing. The depths in this track are 14 to 12 fathoms, decreasing inside to 8 and 7, then gradually to 5 fathoms in Macao Road. On the north side of the Grand and the Little Ladrone there is a safe passage, with 15 to 10 fathoms water between them and the islands to the northward, by giving a berth to the sunken rock that lies half a mile from the north side of the Little Ladrone; but a ship

through the channel: and by veering to East and S. E., it carried her up to Lintin, where she rode in smooth water during the hardest part of the gale, whilst we, in the Anna, were in danger of being driven on shore. Our Chinese pilot completely lost his faculties through fear. Had the ship parted from all the anchors, we could not have veered her head towards the river, on account of the strength of the wind.

adopting it should pass round Potoe on the outside: although there are 6 and $6\frac{1}{2}$ fathoms betwixt it and Woong-boo, the nearest island, it is not advisable for ships to go between them.

FROM MACAO ROAD AND THE TYPA TO THE BOCCA-TIGRIS.

Caution relative to entering Canton River.

SHIPS about to enter CANTON RIVER, near the equinox in September, or at any other time when a Ty-foong is apprehended, should proceed well up the river above Lintin, where they will be much safer during a storm than in Macao Road. When passing Macao, an officer may be sent in the outside pilot's boat, or in the Compradore's, or some other Chinese boat, to procure the river pilot whilst the ship is proceeding upward. It is not safe to send the ship's boat ashore in passing, unless she is near Macao, and the wind fair for the boat to run in, because several boats have been driven out to sea and have perished; the Ladrones have captured others which were sent to Macao for pilots;* and the officers or Europeans who have the misfortune to fall into the hands of these pirates are generally threatened with death until a heavy sum is paid for their ransom. Capt. Funter, who was captured among the islands, in a brig returning from Manila towards Macao, suffered a very cruel death under the hands of these barbarians. The ship Ann, Captain Churchman, was boarded by them in 1808, and himself, his officers and crew, were massacred.

The Typa.

THE TYPA ANCHORAGE is formed between two high islands; that on the south side, called Apomee or Ko-ho, is separated from the N. E. point of Montanha by a narrow gut with 20 feet water in it, decreasing to 9 or 10 feet farther in towards the Typa. The island on the north side is called Typa Cabrado, or Cabaretta, and by the Chinese Kai-kong: the rocky east point of this island is called Cabaretta Point; and the east point of the outer island, Ko-ho or Cow-ow Point, bears from Potoe Island N. by W., $\frac{3}{4}$ W. distant $6\frac{1}{2}$ miles. The entrance of the Typa is in lat. 22° 8′ N.

Ships entering or leaving the Typa should weigh at half-flood, if circumstances admit. Coming in, steer for the north point of Ko-ho, and pass it pretty close, the deepest water being on this side the entrance; continue to steer along until the Peak of Sy-lock is on with the north point of Ko-ho. This mark preserved, or the north point of Sy-lock kept just in sight, bearing about E. by S., leads in the deepest water; and when the east end of the middle hill of Kai-kong opens to the westward of a rocky mount that forms the S.W. point of the same island, you may haul gradually to the northward, and anchor near the west point of Kai-kong, with the south point of Sy-lock open of the north point of Ko-ho. Here, the depth is $3\frac{1}{4}$ to 4 fathoms at low water, and ships are sheltered from all winds by the high lands around; the deepest water is near the west point of Kai-kong, for the bay opposite, formed at the east end of the Island Mackkareera, is shoal. The watering cove is at the west part of this bay, and from the north point a reef of rocks projects near a quarter of a mile to the eastward; a ship ought not to go so far northward as to approach this reef. In the middle and eastern parts of the Typa the water is not so deep in the fair channel leading to the anchorage, for there the depths are only 14 and 15 feet at low water; but a ship can receive no injury by grounding, the bottom being remarkably soft. High water in the Typa at 10 hours on full and change of moon; the tide rises about 7 feet,

Tides.

and runs at the rate of $1\frac{1}{2}$ and 2 miles per hour, when not influenced by the winds. The ebb runs out of the mouth of the Typa, but it sets across the entrance if you are out-

* One of these, belonging to the Marquis of Ely, with the fourth officer and twelve men, fell into the hands of the Ladrones, in 1809, and were ransomed for 7,000 Spanish dollars.

side the points. There is only a few minutes of variation here at present, and it is difficult to say whether it is easterly or westerly. Variation.

MACAO ROAD is shoal, the depth generally from 3 and $3\frac{1}{4}$ fathoms at low tide on the west side, to $4\frac{1}{2}$ or 5 fathoms close over to Sam-cock and the other islands that bound the east side: there is no danger of a ship striking on her anchor, for as the bottom consists of very soft loam or loose mud, the anchors immediately bury in it. Large ships, to preserve good depth of water, usually anchor near the islands, with Macao Town bearing between W. by N. and W. N.W., distant 6 or 7 miles, which renders the communication with that place difficult and dangerous in blowing weather; nor do the pilots like to go so far off if any of the Ladrones are in the neighbourhood. With Ko-ho Point bearing about S. by W. $\frac{1}{2}$ W., and Macao Fort or the Town W. N. W., distant 4 or 5 miles, a large ship may anchor in $4\frac{1}{2}$ fathoms at low water, and be more conveniently situated for procuring a pilot. A ship drawing under 18 feet may anchor with Macao Town on the same bearing, about $1\frac{1}{2}$ miles off the entrance of the Typa, into which she may run if a gale is approaching. A small ship may anchor in the South-west Monsoon in the mouth of the Typa, nearest to the south point, where she will have 3 or $3\frac{1}{2}$ fathoms at low water; and a little within the islet of Kaow, which lies on the north side of Ko-ho Point, fresh water may be got at several places. In the North-east Monsoon she may anchor close over to the northern shore, abreast a sandy beach, between the Nine Islands and Macao Town, in 3 or $3\frac{1}{4}$ fathoms at low tide: here, she will generally have smooth water and an easy communication with the shore. Directions for anchoring in Macao Road.

MACAO CITY, called Gaou or Ou-moon by the Chinese, is in lat. 22° $10\frac{1}{2}$ N., lon. 113° 32′ E., or 18 miles East of Canton by chronometers, and 12 miles West of the Grand Ladrone. There are several forts on the hills round the city, which is irregularly built on a high peninsula that terminates the Island of Macao to the southward, and joined to it by a narrow isthmus north of the town. Macao.

This healthy and pleasant settlement, the only one possessed by Europeans within the limits of the Chinese empire, is completely under the jurisdiction of the viceroy of Canton: although the Portuguese are permitted to retain the *nominal* government of the town, it is dependant on the Chinese for provisions and every necessary of life. The river pilots which are procured here each receive a chop from the residing mandarin, to deliver to the officer stationed at the fort in Bocca-tigris, describing the force of the ship, and to what nation she belongs.

MACAO HARBOUR, formed between the peninsula and the large island Twee-lien-shan to the westward, is narrow at the entrance, but has 21 and 20 feet at low water close to Fort St. Jago, situated on the east point: and from hence, along the eastern shore to the town, the depths continue nearly the same. The Harbour.

A ship proceeding to the harbour must pass through the Typa, there being 13 feet at low water in the fair track between the Typa and the entrance of the harbour; but only 12 and 11 feet in the large space betwixt Kai-kong and Macao. The channel lies in a direct line from the anchorage in the Typa to the harbour's entrance, and to avoid Pedromeo sunken rock about a quarter of a mile eastward of the north-east point of Mackkareera, the north-east point of Montanha must be kept open to the eastward of Mackkareera; or in passing it, keep rather more than mid-channel towards Kai-kong. From hence, steer direct for the entrance of the harbour, there being no other danger except Pan-lung-shee, a rock on the east side the channel, from which the outer point of Great Mal-low-chow bears W. by S. $\frac{1}{2}$ S., and the point of Fort St. Jago Directions.

N.W. $\frac{1}{4}$ N., distant about half a mile. Great Mal-low-chow is the outermost of two high islets, to the S.W. of the harbour's entrance. The north-east point of Montanha on with the east point of Mackkareera leads clear to the westward of Pan-lung-shee, and a ship will not be too near it, if she do not get to the eastward of a line drawn from the west point of Kai-kong to Fort St. Jago point. This point should be rounded pretty close, in entering the harbour, and the eastern shore kept nearly a board, to the anchorage abreast the town. By obtaining permission from the governor, a disabled ship may here be hove down and repaired; in such case, a pilot will be granted to bring her from the road or Typa, to the harbour; but any navigator, by adhering to the preceding directions, or being in possession of Capt. P. Heywood's excellent plan of this place, published by Laurie and Whittle, in 1809, may run safely into the Typa without a pilot.

Nine Islands. COW-CHOW, or NINE ISLANDS, bearing from Potoe N. $\frac{1}{4}$ W., distant $12\frac{1}{4}$ miles, and lying near the western shore, about 4 miles N. E. of Macao, are a group of islets near each other; the outermost, bearing N. 57° E. from the Church Senhora de Penhos at Macao, has 4 fathoms at low water close to; and S.W. from this islet about three-quarters of a mile there is a rock always visible, not in the way of ships.

Tides and under tides. From Macao to Linkeet, the western side of the channel generally consists of a mud-bank, on which the depths gradually decrease; they increase quickly in standing from thence to the east side of the channel.

Tides. In Macao Road, and between it and Lintin, tides are frequently irregular, setting in a different direction at the surface to what they do underneath, by which ships are rendered ungovernable in light breezes. The ebb is stronger, and continues longer than the flood; the freshes often running out below, when a flood tide at the surface is setting into the river.

Directions for sailing from Macao Road towards Bocca-tigris. DEPARTING from Macao Road, with a leading wind, a ship may weigh with the ebb tide, if she can haul over to N. Eastward for Lintin; as in such case the tide will act upon her larboard bow, and keep her off from the western shore: whereas, with an easterly wind, the flood is likely to horse a ship into shoal water near that shore. With a fair wind, steer N. Eastward for Lintin; if it be night, from $4\frac{1}{2}$ to 5 fathoms are good soundings; for at low water spring tides, greater depths ought not to be expected, until several leagues N. Eastward of Macao Road. In turning up with a northerly wind and flood tide, tack from the west side the channel in $4\frac{1}{2}$ or 4 fathoms, according to the size of the ship, the lead being a safe guide all along the western shore. The islands eastward of the road may be closely approached, having 5 fathoms near them, and when past Chung-chow, which is the northernmost of these islands, the depths increase to 9 and 10 fathoms in the east side the channel, towards Lantoa. Working from hence to Lintin in the night, stand to $4\frac{1}{2}$ fathoms in the west part of the channel, and do not deepen above 7 or $7\frac{1}{2}$ fathoms to the eastward. Here, the tides become stronger as a ship proceeds upwards.

Lintin Island. LINTIN ISLAND, situated on the east side the channel, is of considerable size, terminating at the summit in a high conical peak, which is in lat. 22° $24\frac{1}{2}'$ N., and $4\frac{1}{2}$ miles East of the Grand Ladrone, bearing N. E. from the outermost of the Nine Islands, distant nearly 5 leagues. From the south end of Lintin a narrow spit of sand extends about $4\frac{1}{2}$ miles southward, having only 3 fathoms water, and rather less in some places, steep to on the west side, with 10 fathoms near it, 7 fathoms touching its verge, then 3

fathoms upon it, and the water suddenly deepens on the east side to 8 or 9 fathoms. When Lintin is approached within 5 miles, to avoid this spit a ship ought not to stand so far to the eastward as to bring the peak to bear N. ¼ E., and she should tack immediately after deepening to 9 or 10 fathoms; but in the night, she ought not to deepen towards it above 7, or at most 8 fathoms. With Lintin Peak bearing N. ¼ E., and Chung-chow S. S.W., there are 7 fathoms on its western edge. Lantoa Peak S. E. by S. is a cross bearing for its southern extremity, in 5 fathoms water.

The anchorage at Lintin is in 10 or 12 fathoms, about 1½ miles off the sandy beach on the S.W. side; under 10 fathoms the water shoals quickly to the shore. Fresh water is procured at the eastern extremity of the beach, and at times a few bullocks and vegetables may be procured from the inhabitants of the village. High water at 12 hours on full and change of moon; the tide rises 7 or 8 feet, runs nearly North and South, and the ebb in the freshes sometimes sets at the rate of 5½ or 6 miles per hour. In the North-east Monsoon the neap times are very irregular, sometimes only one flood perceptible during 24 hours, with a small rise when the other flood should prevail. Off the west end of this island there are 14 and 15 fathoms water; round on the north side, not more than 2½ or 3 fathoms: and about half-way between the island and Kee-ow Point there is a mud-bank, with 2¾ and 3 fathoms on it at low water, having on the inside, between it and that point, 4 and 4½ fathoms. Anchorage. Supplies. Tides.

KEE-OW ISLAND, about 7 miles West of Lintin, and named from a village a little way to the westward, here forms the western shore: the land from thence taking a westerly direction, a large open space intervenes between it and Lankeet; on the south side of which, and close round the northern side of Kee-ow Island and Point, is the northern channel of only 1½ fathoms water, leading to Cam-sing-moon. Kee-ow Point.

CAM-SING-MOON is a safe harbour for small vessels, and is frequented by those employed in the opium trade; the entrance, which is about half a mile wide, bears W. by S. 10 miles from Lintin Peak, and is 8 miles to the northward of the Nine Islands: it is formed between the south part of Kee-ow Island and a point of Macao Island called Bluff Head. Between Bluff Head and the sunken rocks, and small isle near the opposite shore, the depths are irregular, from 14 to 6 fathoms; but inside, about half a mile West, or W. by S. from the small isle, the bottom is soft, affording safe anchorage in 6, 5, or 4 fathoms, by avoiding the shoal patches of this harbour, marked on the small plan of it, given on the Chart of Canton River. This would be a desirable haven to run for, at the approach of a Ty-foong, were it not for the extensive flat outside being too shoal for the passage of ships drawing much water, the depths being only from 2 to 3 fathoms at low water spring tides, to the distance of 2 miles outside the entrance; but when within a quarter of a mile of Bluff Point they increase quickly to 7 and 8 fathoms, and this is the proper side to steer for, in coming from the eastward, and also to keep nearest to, when steering into the haven. Cam-sing-moon.

LINTIN SAND, or the Lintin Bar of the pilots, is a long, narrow sand-bank, the southern extremity bearing W. by N. ¾ N. from Fan-shee-ak, and N. N.W. ¼ W. from Lintin Peak, distant about 5 miles from the north end of this island. It extends in a N. N.W. direction nearly 8 miles, bounding the east side of the channel, the deepest water in which is near the west side of the sand: to the eastward of it, in the Eastern Channel, leading to Urmston Bay, there are from 3½ to 4 and 5 fathoms. The sand is not a quarter of a mile in breadth, and has 2½ fathoms on the middle and Lintin Sand.

southern parts, and only 2 fathoms at low water towards its northern extremity, with Sampan-cow just open to the westward of Anung-hoy Point. About 4½ miles from Lintin, bearing North from the peak, there are two rocky islets, the easternmost of which, called Fan-shee-ak, is the larger: when these rocks are in a line bearing E. by S. ¾ S., the southern extremity of Lintin Sand is on the same bearing. The east side of the channel, between the south extremity of the sand and the north end of Lintin, is bounded by mud banks, with 3 and 3½ fathoms on them at low water, the soundings rather irregular.

To sail from Lintin up channel.

To sail up channel from abreast Lintin with a fair wind, run up in soundings from 5 to 6½ fathoms: with a westerly wind, borrow on the west side of the channel: if it is easterly, keep in 6 to 6½ fathoms with the flood tide. Ships may with safety proceed 3 or 4 leagues above Lintin, even in the night, with a working wind, the lead being a certain guide, by tacking from the west side of the channel in 4½ fathoms, and from the east side in 6½ fathoms; but after being about 2 or 2½ leagues to the northward of Lintin, they ought to tack in 5½ fathoms from the east side of the channel, for the deepest water is near the edge of Lintin Sand, and if a ship begin to shoal on its verge to 5 fathoms, she will not have room to tack.

Lantoa is frequently obscured by clouds or haze, but when its summit is visible, the *West Peak* of that island affords a good mark for running up channel in the day. Proceeding upward, steering N. by W. or N. by W. ½ W., draw gradually the high west peak of Lantoa on with the west end of Lintin, and continue to draw it more easterly until it is on with Lintin Peak, or a little open to the eastward of that peak, and keep it so, until you are more than half-way from Lintin towards Lankeet. Then, if the wind is contrary, Lantoa West Peak may be brought nearly to the east end of Lintin, in tacking from the east side of the channel; and it may be brought well to the westward of Lintin Peak, when tacking from the west side; but on a nearer approach to Lankeet, the West Peak of Lantoa must not be brought to the westward of Lintin Peak. When within 5 miles of Lankeet, the West Peak of Lantoa must not be brought more westerly than touching the east end of Lintin, when in the west side of the channel; and to a considerable way open with the same, when on the eastern side. Here the depths decrease, and there is only about a fathom more water in the east side than in the west side of the channel. A *narrow mud-bank*, with 2½ fathoms at low water, bounds the west side of the channel in this part, and extends in a N. N.W. direction about 4 miles, terminating nearly 1¼ miles to the S.W. of Lankeet. There is a channel of 4½ and 5 fathoms westward of this mud-bank, into which, or upon the bank, the pilots sometimes get ships in the night; but with large ships they are more inclined to borrow close over to the eastward, whereby they have frequently grounded the European ships upon Lintin Sand.

Some of the pilots know little of the navigation of the river, and when they get into shoal water, cry immediately, *let go anchor*, although the ship may be touching the ground: it is therefore proper, when the pilot appears confused or uncertain of his position, to anchor before the ship get into shoal water.

A SHIP being about 1 or 1½ miles off Lintin, a N. by W. ½ W. course would carry her fair through the channel, close on the east side of Sampan-chow, were the tides to run in that direction; but from Lintin they set N.N.W. and S. S. E. nearly as far as the north end of Lintin Sand, and from thence to Sampan-chow they set about N.W. by W. and S. E. by E.

Steering up channel, with the West Peak of Lantoa open a little to the eastward of

Lintin Peak, or keeping between $4\frac{1}{2}$ and $5\frac{1}{2}$ fathoms if the weather is cloudy, Lankeet Island will be seen making like a saddle, and shortly afterwards two small islets or rocks will appear close to its eastern extremity. These rocks will be nearly on with the middle of the opening of the Bocca-tigris when first seen, and should not be brought more easterly; nor in working ought they to be brought to touch the point of Tiger Island, which forms the west side of the opening, until within $4\frac{1}{2}$ miles of Lankeet; being then to the northward of Lintin Sand, a ship may edge over to the eastward. There is no *good cross mark* to know when clear of this sand; but when a pagoda on the western shore is brought to bear S. 52° W., a ship will cross to the northward of its extremity. Sampan-chow a little open with Anung-hoy Point, bearing N. $26\frac{1}{2}$° W., leads upon the north end of the sand, from which the little hill on the east end of Lankeet is distant about $5\frac{1}{2}$ miles.

LANKEET FLAT, or bar, extending from the northern extremity of Lintin Sand, across the channel to the shoal mud-bank on the west side, and N.W. to Lankeet, consists of sand and mud, with hard bottom in some places. The depths on it are 3 and $3\frac{1}{4}$ fathoms at low water, and $4\frac{1}{2}$ to $4\frac{3}{4}$ fathoms at high water spring tides: a ship drawing more than 20 feet ought not to pass over it until about half-flood. Close to the northward of this flat there are generally some fishing stakes, and others between Lintin and Lankeet; care should be taken not to run over the boats fastened to them, which commonly shew lights when ships approach them in the night. Lankeet Flat.

LANKEET, or LONG-EET,* in lat. 22° 41′ N., bearing N.N.W. $\frac{1}{2}$ W. from Lintin Peak, is formed of two hills, sloping into a low point at the west end, where is a well of fresh water, by a small temple close to some trees; but the island is not inhabited. From its south part a flat projects 2 miles to S. S. Eastward, having only $2\frac{3}{4}$ fathoms water on it, between which and a long narrow sand to the westward there is a channel leading close past the west point of the island, to the western part of Ty-cock-tow. To proceed up the channel, keep a large white patch on Ty-cock-tow in a line with the outermost of the rocks that project off the west end of Lankeet; with this mark on, a vessel will have $4\frac{3}{4}$ or 5 fathoms at high water, about 4 miles from Lankeet; and will carry the same till nearly abreast the west end of the island, where she will have 6 or $6\frac{1}{2}$ fathoms close to the rocks. This is a convenient place for a ship to moor, when circumstances require her stores or sick to be landed. All the space between Lankeet and Ty-cock-tow is very shoal, having in many places only one fathom at low water. Lankeet Island. Channel and anchorage to the westward of it.

SAMPAN-CHOW, or BOAT ISLET, lying about $1\frac{3}{4}$ miles N. N. E. of Lankeet Hill, is small, of middling height, resembling a boat turned bottom upwards: an extensive rocky bank projects N.W. from it, partly above water, joining to the shoal bank that extends from Lankeet to Ty-cock-tow. Close to Sampan-chow on the east side are 9 fathoms water. This islet is the best guide for crossing over the flat between the northern part of Lintin Sand and Lankeet. Sampan-chow.

WHEN SAILING or working up channel, keeping in $4\frac{1}{2}$ to $5\frac{1}{2}$ fathoms, shortly after the rocks off the east end of Lankeet are perceived on with the middle of the opening of Bocca-tigris, or rather more westerly, Sampan-chow will be seen when within 6 or 7 miles of Lankeet, and will then appear under the land, a little to the To sail over Lankeet Flat,

* Dragon's cave or den.

eastward of the high, round summit of Anung-hoy, a high, round hill, sloping to a point on the west side, and forming the eastern boundary of the Bocca-tigris. When Sampan-chow bears about N. N.W., it is on with the middle of Anung-hoy Hill, and this is a *leading mark* through the channel. With a working wind, turn upwards with Sampan-chow kept between the eastern shoulder of Anung-hoy Hill and the west point of the same, but that islet must not be opened to the westward of Anung-hoy Point until you are clear of Lintin Sand; for if it be open with that point, you will get upon the northern extremity of the sand, about 5½ miles from Lankeet. With an easterly wind, to prevent being set by the tide towards Lankeet, keep in the east side of the channel, with Sampan-chow shut in a little to the eastward of Anung-hoy Point, or nearly on with it: when within 4 miles of Lankeet, you may stand well to the eastward in working, opening Sampan-chow considerably to the westward of the point, being then to the northward of the extremity of Lintin Sand; you must not, however, stand so far over as to bring Anung-hoy Point to touch Chuen-pee, but tack before they come on, for farther to the eastward the water is shoal. After opening Sampan-chow with Anung-hoy Point, which with a westerly wind need not be done until abreast of Lankeet, steer then direct for the land of Anung-hoy, giving Sampan-chow a berth to the westward of half a mile or more at discretion, in 9 or 8 fathoms; the depths from hence will be 9, 8, and 7 fathoms, to the entrance of the Bocca-tigris, increasing inside to 13 and 16 fathoms near Whang-tong.

and from thence to Bocca-tigris.

If in a small ship a cast of 3½ or 4 fathoms hard ground be got before Lankeet is seen, in a clear night, you may be certain of its being on Lintin Sand, and will deepen fast in hauling to the westward into the channel.

Fansyack Channel.

FANSYACK, or FAN-SHEE-AK CHANNEL,* formed on the east side of Lintin North Sand, is thus described by Captain Blakely:—It would be imprudent for ships drawing 23 feet water to attempt this channel, being very narrow just above and about Tree Island, with a considerable swell when blowing strong from northward. Ships of 20 or 21 feet draft, intending to proceed by this channel with a working wind, should observe the following directions. In coming from southward keep the eastern shore aboard, avoiding the spits of shoal water at the points of the islands until off the north end of the Island Mah-chow, the shoal off the south end of which being avoided by not shutting Tree Island in with Mah-chow, or by not bringing the highest peak of Mah-chow to the westward of N. ½ W., when Fansyack and the rock off it are in one, which is the mark for the south end of Mah-chow spit; from hence to Syah or Tree Island (known by having one large tree on its centre), when standing towards Lintin Bar or Fansyack Bank, keep the lead going, and tack in 4 fathoms or less, according to a ship's draft of water; but the lead will best guide, as the bank is much curved in shape. Standing to the eastward do not bring the north or highest peak of Mah-chow to the eastward of South, and when the south point of Suechan bears N. 43° E. do not bring the tree on Tree Island to the westward of N. by W. ½ W., to avoid the shoal spit of 2 or 3 fathoms, that extends S. S. E. from that island nearly a mile. When thus far, endeavour to pass between Tree Island and the fishing stakes No. 1 (in the chart) placed near it; this island is safe to approach *close to the rocks*, but on the western side of these stakes the water shoals suddenly to 3¼, 3, and 2¾ fathoms, irregular soundings, sand and mud.

Being close to the west end of Tree Island, do not bring the tree to bear more to the

* Captain Blakely, of the Company's ship Waterloo, surveyed it in 1829, which survey is laid down on my chart of Canton River and proximate channels.

southward than S. E. ½ E., this bearing being close on the edge of the shore bank. Standing to the westward, do not bring the rock off Fansyack to the eastward of the saddle on the east end of Lintin, or the east end of the fishing stakes (numbered in the chart 3) to the northward of N. W. by N., the lead not being a sufficient guide for the channel bank.

If the fishing stakes be not removed, they appear to be a preferable guide to the land-mark, being always discernible, but either may be used in clear weather. When within half a mile of the stakes No. 3, the passage becomes wider, extending from the shore bank to Lintin Bar, with 4, 4¼, and 4½ fathoms at low water, shoaling gradually on either side, so as to render the lead a guide in tacking, the bottom being very soft mud.

If close to Tree Island with a leading wind, steer direct for the centre of the fishing stakes No. 3, and pass on either side of them, as circumstances require.

There is another range of fishing stakes (numbered 4), bearing S.W. ½ W. of No. 3, which will, when near them, and bearing South, warn ships of their proximity to Lintin Bar.

With ships drawing under 20 feet, a wider range may be taken; but they ought, if possible, to follow the above directions, and at any rate pass between Tree Island and the fishing stakes No. 1, or very close to their western end, and avoid the channel bank as much as possible. Ships drawing 17 feet or under may pass up or down any part of the channel, keeping to the eastward of Fansyack well over towards Mah-chow, avoiding the shoal spits which project from the ends of the islands. The tides were found to be very irregular, especially on the neaps, the rise and fall then only 2½ to 3 feet, and from 6 to 8½ feet on the springs: velocity from 3 to 4 knots, and from 2 to 2½ knots on the neaps. High water about one hour at the change of moon. *Tides.*

A ship proceeding up with a working wind should weigh instantly that the tide slackens sufficiently for her to make any progress, in whatever part of the channel she may have anchored. The passage between Lintin and Fansyack should not be attempted in large ships, having only 2½ to 3 fathoms at low water in most places.

BOCCA-TIGRIS TO CANTON.

Chuen-pee and the adjacent land.

CHUEN-PEE, in lat. 22° 44¼′ N., off which British ships of war usually anchor, is the southern extremity of the land on the east side of the Bocca-tigris, as Anung-hoy is the northernmost land on the same side: Chuen-pee Point is formed close by a small peak, called Chuen-pee Hill, bearing N. N. E., distant 1¾ miles from Sampan-chow, having on each side a small sandy beach. Fresh water is got in the bay on the east side near a temple, but ships do not anchor there, the water being shoal on a sandy flat that extends from the point to the eastward and S. Eastward. The anchorage is in 6¾ or 7 fathoms at low water, about a third of a mile off the beach on the north side the point: the tide flows here till near 2 hours on full and change of moon, and rises about 7 to 8½ feet. On the N.W. part of Chuen-pee there is a small Watch-turret, with a fort under it on the north side; between these and the south point several rocks project a quarter of a mile from the shore, with 12 fathoms close to the outer-most; on these rocks some ships have grounded by borrowing too close. Anson Bay, on the same side, formed between the north point of Chuen-pee and Anung-hoy, is very shoal; from 6 fathoms the depth decreases suddenly to 2 fathoms within a line joining the points, affording only a harbour for boats.

Ty-cock-tow. TY-COCK-TOW, the point of land on the west side of the Bocca-tigris, has near it 7 fathoms water; it is a smooth anchorage when westerly and S. Westerly winds prevail, and preferable at such times to the anchorage off Chuen-pee. From Ty-cock-tow to Sampan-chow the west side of the channel is lined by a shoal flat, on which boats only can pass on to On-chow, the two small islets adjacent.

ANUNG-HOY POINT (called Namshan by the pilots) lies about 2 miles North of Ty-cock-tow Point, and near 3 miles N.W. $\frac{1}{2}$ N. from the Chuenpee Peninsula; it forms the eastern side of the Bocca-tigris, and has two forts on it, behind which the land, which is high, rises to a peak.

Wang-tong. THE NORTH AND SOUTH WANG-TONG are two islands nearly in mid-channel abreast of Anunghoy Point. They lie on a bank about a third of a mile apart N. N.W. and S. S. E. from each other, the bank extending both above and below them in the same direction. The North Wang-tong is a small island, with some trees and a fort on it, betwixt which and the opposite fort on Anung-hoy is the narrow pass, called the Bocca-tigris (Bocca-tigris.), which is contracted by a rock above water at a small distance from Wang-tong. Close to this rock there is deep water, from 18 to 22 fathoms, and although the passage between it and Anung-hoy Fort is too narrow for working a large ship, she can always *back and fill* through with the tide, when the wind is light or contrary.

By attending to the foregoing directions, a ship may be navigated with safety to the Bocca-tigris without a pilot; having entered it, the fair channel is in a direct line betwixt Anung-hoy Point and Wang-tong; but as no ships are permitted to pass, until the chop and Macao pilots are examined, the best position to anchor is in 7 or 8 fathoms abreast of, or a little above the fort and turret on Chuen-pee.

Canton River. The entrance of the CANTON RIVER, named CHOO-KEANG* by the Chinese, is formed by the points of Chuen-pee and Ty-cock-tow, or perhaps more strictly between Ty-cock-tow and Anung-hoy. It is divided into two channels by the Wang-tong Islands; the eastern one of which is used by European shipping, and is named Hoo-mun, or Hoo-tow-mun† (Tiger's Head Entrance), and Foo-mun by the pilots.

The Chinese have a redoubt and a fort at Anung-hoy Point on the eastern side, and two forts on the northernmost Wang-tong, which forms the western side of the channel. On the south side of the North Wang-tong there is an office belonging to the Hoppoo, or Collector of Customs, where the pilots must, whether going up or down, produce the chops for allowing the ships to pass; and lately, a squadron of their war boats have been stationed about Chuen-pee: to these must the pilots also produce the chops, otherwise they will at times fire at the ships, and certainly punish the pilots most severely. It will, therefore, prevent detention or insults, by allowing the pilot boat to precede you, and make his report.

When entering the river, ships turning through, as they near the South Wang-tong, must be careful of the shoal flat, that extends $1\frac{1}{4}$ miles to the S. E. of the island, having only $1\frac{1}{2}$ fathoms water in some places: they should not, therefore, stand so far to the westward as to bring the eastern extreme of Tiger Island so near as to touch the eastern part of the fort on the North Wang-tong, but tack before they come on.

* The Chinese names were obtained from the Reverend Robert Morrison, at Canton, by Captain Ross; from whose survey of the river to the Second Bar, these remarks have been obtained.

† Or Hoo-tow-moon; called by Europeans Bocca-tigris, a name first applied to this pass by the Portuguese.

The passage is between a Dry Rock, near the Wang-tong, and the high land of Anung-hoy, and is only half a mile wide, with deep water, and an uneven bottom. The tide runs strong through in eddies, and ships generally keep nearest the eastern shore in passing.

To the westward of the Wang-tongs $1\frac{3}{4}$ miles there is a very remarkable and high island, named by the Chinese Ty-foo, and by Europeans Tiger Island, the summit of which appears cleft. About half-way between the south point of this island and North Wang-tong there is a DANGEROUS POINTED ROCK, having only 16 feet water on it at low spring tide. You will avoid this rock by not bringing Sampan-chow to touch the east end of North Wang-tong, until you have approached Tiger Island so near as not to see the high land of Geefoo to the westward of it. At anchor in a boat over the rock, the small round hummock on the western part of the South Wang-Tong was seen over the western slope of the North Wang-Tong, between the small redoubt with a tree on it and the point: and the high land of Geefoo was just touching the western brow of Tiger Island. The soundings round the rock are 7 and 8 fathoms. Dangerous Rock.

About a third of a mile eastward of the highest part of Tiger Island there is a projecting point of the TAWLING-SAA SAND, and when in 4 fathoms on the edge of it, the Watch Tower, which stands on a hill at Chuen-pee, was exactly over the point of Anung-hoy, or eastern side of the river's entrance. Ships turning up towards Tiger Island may stand to the eastward and shut in the high land of Chuen-pee with Anung-hoy Point; but when they arrive at the south point of Tiger Island, must attend to the mark for the edge of the sand. Large ships passing the narrow part, with a contrary wind, generally back and fill through, as the tides are strong. Tawling-saa Sand.

The channel to the westward of the Wang-tong Islands has depths of from 5 to 10 fathoms, and was frequently used by H. M. Ships during the recent operations in the Canton River. When past the Wang-tongs they again struck into the usual eastern channel, by passing between the dangerous rock (above described) and the south point of Tiger Island.

After passing Tiger Island with a fair wind no better mark appears than to keep the tower on Chuen-pee open until you bring Ty-cock-tow Point on with the eastern side of Tiger Island, then steer up the river with them on; they will lead you up in the deepest part in the channel, but nearest to Taw-ling-saa, in 8 or 9 fathoms water. This mark will not answer much farther, than to bring the remarkable high part of Geefoo on with the highest land to the westward, or bearing about S.W.; you should then steer more to the right, and open the point again; so that before you arrive abreast the low western shore, you will bring a hummock on Ty-cock-tow clear of the highest part of Tiger Island, and over the part marked B in the chart* of the river: this mark will carry you in a good deep channel, clear of the Knowls, up to the fishing stakes situated near the western shore, and abreast the spot called the SMALL BAR. Directions. Small Bar.

If your ship does not draw above 20 feet water, and having arrived abreast the fishing stakes, steer a little more to the right, and bring the *mark hummock* between where it is in the view, and the part marked A; these marks will carry you between the north end of the Small Bar, and a hard knowl to the north-westward of it, having only $3\frac{1}{4}$ fathoms over it at low spring tides. You may steer up with this mark until abreast of a small creek on the eastern shore, bearing about N. N. E. from the fishing stakes: you may then keep in a good depth, about a quarter of a mile off that shore, until the south point of Second Bar Creek is approached, where the channel again narrows to about a quarter of a mile.

* Engraved from Captain Ross's survey of the river, from Bocca-tigris to the Second Bar.

The Small Bar is a patch of hard ground about the middle of the river, below the part where the Company's ships remain to complete their cargoes. When the *mark hummock* on Ty-cock-tow is on with the first or eastern notch of Tiger Island, marked in the view A, and the fishing stakes on the western shore are all seen end-on, there are but 2 fathoms water on the shoalest part of the Small Bar. You will likewise discover the large Tree, marked on the chart, by its being also in a line with the fishing stakes, when they are end-on towards you.

The pilots always use the channel between the Small Bar and the western shore, and when about moving down, an Indiaman with a fair wind will weigh the anchor after she has tended to the flood tide, as by that time the water will have risen 2 or 3 feet on the knowls. They also place boats in the fair channel, or on the $3\frac{1}{4}$ fathoms knowl, which is to the N.W. of the Small Bar. When they first weigh and are steering southward, they have the *mark hummock* on Ty-cock-tow over the gap A on Tiger Island, and keep it so until they are passing the northern point of the small creek, which is below the shipping, when they begin to bring the *mark* towards the highest part of Tiger Island; so that by the time they are drawing near the stakes they will have it over the part B. In this run, they will not have more than $4\frac{1}{4}$ or 5 fathoms on the first of the flood, when passing between the bar and the knowl; but between the bar and the stakes, 5 and 6 fathoms water. With the *mark hummock* over B, a ship may steer for Tiger Island, keeping the marks on until she arrive so far down as to have the hill of Sawshee on the eastern shore bearing about N. E. or about N. E. by N., when she should haul a little more to the westward, and shut in the *mark hummock* behind the highest part of Tiger Island; she may then steer directly for the island, remembering that, after this, the *mark hummock* must not be opened out to the eastward: nor need she go further to the westward than to bring Ty-cock-tow Point on with the east end of Tiger Island; the depths during this course will vary from 6 to 9 fathoms. The *mark hummock* as in the view and Sawshee Hill bearing about N. N. E. $\frac{1}{2}$ E. leads on the edge of Tawling-saa, $1\frac{1}{2}$ miles above Tiger Island. A ship steering as before directed, when approaching Tiger Island, will open out the tower on Chuen-pee, and she must not pass so far off Tiger Island as to have the tower touching Anung-hoy, but keep it well open; and when going below Tiger Island, that she may avoid the 16-feet rock, do not shut in the east end of Geefoo behind Tiger Island, until Sampan-chow is seen to the eastward of, or to the left of North Wang-tong, or until the hummock on the South Wang-tong is shut in behind the West Tower of the North Wang-tong; after which steer for the entrance of the river.

Channel East of Small Bar.

Having sounded the channel between the eastern shore and Small Bar, it seems to be the safest for large ships coming down without a pilot, for it is only necessary to place a boat on the eastern part of the Small Bar in 4 fathoms, as the ship passes between her and the eastern shore.

Directions for sailing outward.

If a ship intend to go down in the eastern channel, she must weigh on the flood, and pass the northern part of the small creek at a cable's length distance, or in $4\frac{1}{2}$ fathoms, and immediately when below the point she should haul over on the eastern shore, to bring the *mark hummock* on Ty-cock-tow over the eastern end of Tiger Island, marked C in the large view, or as it is represented in the smaller view. The water is deepest about a cable's length off the eastern mud-bank; and she may steer with those marks on, until she open Sawshee Hill clear to the southward of the point of land (which is the northern one of another river leading to the eastward), and may then haul over to the westward, steering towards Geefoo, until she bring the hummock on with the part marked B, after which, proceed as before directed towards Tiger Island.

When hauling to the westward, observe that the flood tide does not set you again to the northward on the south end of the Small Bar.

When the summit of Sawshee Hill bears N. 73° E. and the large pagoda N. 34° W., there is a *hard knowl*, with 3 fathoms water on it at low tide: again, with Sawshee Hill bearing N. 65° E. and the large pagoda N. 33° W., there is another, with $3\frac{1}{4}$ fathoms on it; these are on the western shore, near the entrance of the creek.

Sawshee Hill bearing S. 67° E., and the hummock on Ty-cock-tow over B, is the mark for the $3\frac{1}{4}$ fathoms knowl to the N.W. of the Small Bar.

From the middle or shoal part of the Small Bar, Sawshee Hill bears S. $74\frac{1}{4}$° E., and the bar is about twelve hundred yards long.

The channel for ships becomes very narrow abreast a large creek named HAOU-TUN by the Chinese, and by Europeans, SECOND BAR CREEK; its entrance is on the eastern shore, and bears S. 75° E. from the large pagoda. About the northern point of this creek the passage is rendered still narrower by three *small knowls*, which are very hard, and have not more than 2 or $2\frac{1}{4}$ fathoms on them at low water spring tides; the two lowest are about 120 yards apart, and bear from each other S.E. $\frac{1}{2}$ E. and N.W. $\frac{1}{2}$ W., and the northern one is about 300 yards to the northward of the other two. Between the latter and the sand to the westward, there is a narrow channel for ships, not above a hundred yards wide. It is surprising how the Chinese pilots manage to carry through it ships of great draught of water, and often indifferently manned, without any serious accident happening. They, however, make use of numerous boats to buoy off the channel, and are assisted by many to tow. Ships frequently get aground, and lie in a dangerous state for a tide, and this very often proceeds from two or three pushing over together, as there is no time to be lost after the water has risen sufficiently for a ship drawing 23 or 24 feet to pass over.

Second Bar Creek.

Second Bar.

When on the lower knowl in a boat, the two pagodas subtended an angle of 36° 27′, and the small pagoda and summit of Sawshee Hill 113° 42′. On the western one of the two southern knowls, the two pagodas subtended an angle of 37° 16′, and the small pagoda and Sawshee Hill 112° 22′. On the upper one, the two pagodas subtended 37° 47′, and the small pagoda and Sawshee Hill 108° 11′.

The knowls being so close, and the channels so narrow and winding, there is no mark which a large ship could use to pass this part; therefore, the channel must be buoyed off before she could attempt it.

The pilots will sometimes carry ships between the knowls and the eastern shore,* where the ground is soft in some places, but still they must keep very near the former. From feeling with the lead, the knowls seem to be formed of beds of old oyster shells or coral, not liable to alter, although the edge of the sand which approaches them to the westward may change its form. The rise of tide here is 7 to 8 feet, high water about $1\frac{3}{4}$ or 2 hours on full and change of moon, when the tides are regular; but they appear to be very irregular in their strength and duration, and frequently in the 24 hours there will be a long flood and ebb tide, whilst the other two are short and weak. In the winter, the long tides appear to happen between sun-rising and setting, when the moon has north declination; and in the night, when in south: the rise and fall on the neaps is sometimes as much as happens on the springs. The variation in 1816 was only one-third of a degree easterly at the Second Bar, by the observations of Captain

Tides.

* The pilot procured at Macao gets a fisherman at the Bocca-tigris to act as an assistant, who, *in general*, may be trusted more than the former, being better acquainted with the river from thence to Macao. They commonly send their boat to sound with a bamboo on the edges of the shoals, and the person in her waves his hat to the pilot, if the ship be approaching to any place where there is not sufficient depth of water.

Ross; at Chuen-pee, Mr. Dawson, R.N., made it half a degree westerly, by which it appears there is little or no variation at present in Canton River.

Boats leaving Chuen-pee should steer N. W. $\frac{1}{2}$ N. until a little above Tiger Island, keeping near the latter, to avoid the Tawling-saa Sand, then N. by W. to the Second Bar Creek, the whole distance being about 16 miles. If boats are passing between the Bocca-tigris and Macao in the night, great care is requisite to avoid the fishing stakes, when the tide runs strong, as the crew might be lost if a boat struck against any of them.*

Second Bar anchorage.

SECOND BAR ANCHORAGE, where the large European ships were obliged to moor to complete their cargoes, when bound outward, is in lat. 22° 56′ N., about 3 or $3\frac{1}{2}$ leagues to the northward of the Bocca-tigris. Here the eastern shore is safe to approach, and the anchorage is about a cable's length off it, between the Bar Creek and another smaller one to the southward.

Caution requisite in crossing it.

The bar begins at the creek, and directly fronting the north point of it there are some knowls of hard sand and gravel, having only 10 or 11 feet on them at low water; these form the most dangerous part, the depths in the proper channel upon the bar being about 3 and $3\frac{1}{4}$ fathoms. The pilots place boats upon the knowls on each side the channel, for ships to pass between them in the deepest water; but sufficient time should be given these boats to sound with their bamboos, and take their *stations properly;* for if the pilots are not careful they are liable to ground ships on the bar.† From the Second Bar, the channel upwards is generally nearest to the eastern shore of the river, until the First Bar is approached, where it again becomes contracted, and requires great caution.

First Bar.

FIRST BAR, lying more than half-way from the Second Bar towards the anchorage of Whampoa, is formed by a shoal patch of sand near the eastern shore, and by a hard bank or reef projecting from the low islands on the opposite side, a little farther to the westward. To avoid the former, a ship ought to keep about mid-channel, and when past it she must haul over to the eastern shore, to give a berth to the hard bank on the west side.

Brunswick Rock.

THE BRUNSWICK ROCK‡ lies a little way above the First Bar, about 1 or $1\frac{1}{2}$ cables' length below the small Chop House on the northern shore, and about a quarter of the river's breadth from this shore; the rock extends N. E. by E. and S.W. by W. about 50 or 60 fathoms, and half this breadth, being formed of irregular patches, with from 10 to 18 feet upon them at low water spring tides. When upon the rock, the Second Bar pagoda bore S. by E. $\frac{3}{4}$ E., Clump of Trees or Chop House S. S. E. $\frac{1}{4}$ E., Whampoa Pagoda W. $\frac{1}{2}$ N., North-west point of Round Island, or Bold Island, S. E. $\frac{1}{4}$ E. easterly, a large house inland N. $\frac{1}{4}$ W.; and when this house bears from N. $\frac{1}{4}$ W. to N. by E. you are in the line of the rock.

* Which has sometimes been unfortunately experienced.

† Running up in the Anna, with a steady breeze and flood tide in the night, the pilot did not reduce sufficient sail to give the boats time to station themselves properly on the bar; but they left one of the shoalest spits in the space between the line of boats stationed on each side, to guide the ship through; she consequently ran directly against it about high water, and lay aground until the following tide; we had $10\frac{1}{2}$ feet at low water under the bow, 3 fathoms under the quarter, and $4\frac{1}{4}$ fathoms a little outside in the proper channel.

‡ The Company's ship Brunswick got upon this rock in 1798, and though lightened by taking out the guns, stores, and part of her cargo, was so much injured as to make it necessary to go to Bombay for repairs.

The channel through which ships always pass this rock is narrow, for at the distance of half a cable's length S. E. by S. from it, there lies another rock, having only 17 feet on it at low water, and between these is the channel. Close along the north shore there is deep water within Brunswick Rock, where *probably* the passage is safe, and nearly as wide as the usual outside channel between the rocks.

From hence, the shipping are seen at a small distance, moored between Danes Island and Whampoa.

WHAMPOA ANCHORAGE, in lat. 23° 6½ N., is formed on the south side by two high islands, called by Europeans, Danes and French Islands; by low overflowed ground to the northward, this being the eastern part of the island on which the town of Whampoa is built, and that part close to the ship is generally called Bankshall Island. This is a very safe harbour, with a moderate tide, and from 5 to 6 fathoms water, soft mud bottom; but there is scarcely room for two large ships to moor abreast, which occasions the lower part of the shipping to be moored opposite the entrance of Junk River, when there are many arrivals. Danes Island is steep to, except nearly close to the upper low point, where is a rock covered at high water. Bankshall Island is also pretty steep; but a spit projects a little way from its eastern point, where Junk River is separated from the other branch that passes Whampoa, and they reunite a little way below Canton. The flood runs up to Whampoa, until 2½ hours, on full and change of moon. Whampoa Anchorage.

THE CANTON FACTORIES are on the north side of the river, fronting the city, and form part of the suburbs; they are distant about 4 leagues to the westward of the anchorage at Whampoa. By mean of a series of observations, I made them in lat. 23° 7′ 10″ N., lon. 113° 14′ E. of Greenwich, by mean of 5 immersions and 7 emersions of the 1st Satellite of Jupiter, and 29 miles West of the Grand Ladrone by chronometers.* Here, provisions and refreshments of all kinds are procured in abundance; and probably in no part of the world is business transacted with so much ease and regularity as at Canton. September 1st, 1803, the tide rose *on the ground* till 2 hours 40 minutes at Canton, being full moon at 8 hours on that day for Canton time, and the moon was in perigee on the preceding day. The depth of the river from Whampoa to the city is only sufficient for vessels of moderate size; but from Whampoa outward, it will admit ships of great burden. As no record appears of any ship having been lost in this river, except lately the Wyndham on the Brunswick Rock, notwithstanding the numerous large ships which constantly trade here, it may therefore, *probably*, be considered the safest river in the world for ships of any description. Canton. A remark relative to the river.

Directions to accompany the Chart of Canton River, from the Anchorage below the Second Bar to Whampoa Reach.†

SHIPS proceeding up the river in the N. E. Monsoon, or with a weather tide, if drawing much water, should be under weigh by the last quarter flood, to save tide Directions for the upper part of Canton River.

The Alfred, Princess Amelia, and other ships, have also grounded on it; and the ship Wyndham, of Calcutta, was totally lost upon it in 1815.

* Captain Ross, in his survey, makes the difference of lon. 27′ 13″ between them, placing Canton n lon. 113° 15′ E., and the Grand Ladrone in 113° 43′ E.

† This excellent survey of that part of the river mentioned above, shewing the dangers of the First Bar,

across the bar, for the passage between the Knowls being very narrow, they must back and fill through: if their draught of water be moderate, they may weigh much earlier. The difficulty in crossing the Second Bar is in ascertaining correctly the two Knowls, A and B, on each side of which a boat must be placed; for here no marks are afforded, excepting such as are too far distant to be of the least utility.

To find the Knowl B, a boat provided with a lead should pull directly out from the upper point of Second Bar Creek, making allowance for the tide, so as to keep the boat in a direct line across the river. In crossing the river she will have 4, 4½, then 3½ and 3 fathoms, immediately after which she will cast upon the Knowl in 2 and 2½ fathoms. From thence to find the Knowl A, she should pull across the channel in a N. E. direction, so as to fetch above the fishing stakes, and directly in a line with the first small creek above Second Bar Creek, and in crossing the channel she will have 3½ fathoms. The fishing stakes are sometimes removed, but by steering direct for the small creek a boat can hardly fail sounding on the Knowl A, or should she miss it, let her pull direct in shore from the Knowl B, for the upper point of Second Bar Creek, until she get a cast of 4 fathoms, then by pulling up along shore, keeping as nearly as possible at the same distance from it, she will soon sound on Knowl A, in 2 and 2½ fathoms. It is best to place the boats on the Knowls at the first of the flood, but by marking the comparative depths of water, a careful officer may at all times of tide place his boats on these Knowls. The ship must pass between the boats, taking care to keep tolerably near to the upper boat in passing it, which is the narrowest and most dangerous part of the bar. After passing the upper boat, the course inclines very little to the westward of a line parallel to the shore. Crossing the bar in this manner, you will not have less than 4¼ fathoms, at three-quarters flood. When the large pagoda bears W. N.W. the worst part of the bar is crossed, and when it bears W. by N. you will be over it; but the water continues shoal for a little distance farther, and is frequently the cause of alarm to those who are unacquainted. In proceeding up the river, after the pagoda bears W. by N., the ground is soft and loose, unlike that on the bar, which is in parts hard and stony. The pagoda bearing West is the mark for anchoring if bound down the river, and waiting for water to cross the bar. Large ships should not bring it to bear to the northward of West before they anchor. The channel here begins to widen, but the tail of the Second Bar shoal extends some distance further up;—the mark for passing it is the large pagoda just shut in with the south end of the wall of an old fort, which stands near it; and in coming down the river, when the pagoda is observed just opening to the southward of the wall, the ship is passing the tail of the sand and must keep towards the east shore. Large boats in watering should be careful, if they do not leave the watering place near the pagoda before the ebb makes, not to ground on that part of the shoal, which is dry at low water, as at X. This may be avoided, making allowance for the tide, by keeping right across the river until nearly half over, before they steer direct for the shipping below the bar. After passing above the Second Bar shoal, the river is clear from side to side, but the deepest water is near the east shore, and ships with a leading wind generally keep it close aboard until they reach the First Bar. Whampoa pagoda

Second Bar, and Brunswick Rock, with marks to avoid them, was executed in 1816, by Captains Newell and Auber, then officers in the Company's service. The Chart was founded on the measurement of several base lines, made with great accuracy. The soundings were taken at low water spring tides, the perpendicular rise of the tides being then 10 feet. All these surveys of the Coast of China, Canton River, and dangers in the China Sea, have been engraved at the expense of the East-India Company for the benefit of navigation, and may be procured at their booksellers', Messrs. Allen and Co.

observed just on with the northernmost clump or hill on Danes Island, appearing as at No. 1, sketch A,* shews the approach to the lower shoal of the First Bar, you must then haul out into the middle of the river to avoid it, as it projects a little distance from the starboard shore, and is nearly opposite a chop house, surrounded with a cluster of trees. The marks for the shoalest part of the lower shoal are, the clump of trees surrounding the chop house just in the gap of Saddle Hill, and Whampoa pagoda in the gap on Danes Island, and appearing as at No. 2, sketch A: on this part there is only 12 feet at low water. The mark to clear this shoal is Whampoa pagoda kept on the declivity of the large hill on Danes Island, as at No. 3, sketch A. When the chop house bears S. S.W. haul over to the starboard shore to avoid the upper shoal of First Bar: the mark for leading into the channel clear of this shoal is the small Pagoda near the Second Bar, kept open to the eastward of the clump of trees surrounding the chop house. The shoal lies nearly in the middle of the river, and has 3 fathoms close to it at low water. The channel is deep, close in shore, and being narrow, you must back and fill through, except there be a leading wind. Ships bound down the river frequently warp over the flood through this passage. The shore towards the First Bar point must be kept close aboard, until Whampoa pagoda is seen clear open of all the land on the opposite or south shore, right up; then you may haul over without fear of the upper end of the shoal, which is dry at low water, and steer for the passage to clear the Brunswick Rock, by keeping the north shore pagoda on with the left declivity of Moffat Hill, and appearing as at No. 4, sketch B. This mark will carry you between Brunswick Rock and a small stone or rock, lying to the southward and eastward of it, which has 17 feet on it at low water. The north shore pagoda stands on the starboard side of the river at the upper part of the reach, and will be easily discerned over Moffat Hill. Brunswick Rock extends considerably, with gaps of uneven soundings; the marks for the shoalest part are, the North shore pagoda on with the right declivity of Moffat Hill, appearing as at No. 5, sketch B, and a large conspicuous house which stands on the north shore to the right hand side of Hill V.: when this house is on with Hill No. VI. you will be clear of all danger, and then steer for Whampoa Reach, keeping near to the starboard shore. The Hills IV., V., VI., are easily discerned in coming up or down the river: the two marked IV., V., are much smaller than the others, and appear of a dusky red colour. The Hill No. VI. is almost covered with trees.† The same marks must be observed in coming down the river to avoid these dangers, and in this case it will be easily perceived, that the large house on the north shore on with Hill No. VI. indicates the approach to Brunswick Rock, as the same house on with Hill No. VI. does when proceeding up the river.

Entering Whampoa Reach, the river is clear on both sides, although the south shore, or that of Danes Island, is generally preferred; but care should be taken not to anchor just above Danes Island pagoda, as several ships have lost their anchors in this place. The Chinese fishermen describe it as a shoal of rocks, covered by a body of sand. There are 7 and $7\frac{1}{4}$ fathoms in this place at low water. The cross bearings for it are, the north shore pagoda N. by E. $\frac{3}{4}$ E., Danes Island pagoda S. S E. $\frac{3}{4}$ E., Tree pagoda W. by N. $\frac{3}{4}$ N.

In proceeding up or down the river, care must be taken to give a wide berth to a spit of sand in the middle of the entrance of Junk River, on which there are only 9 and

* See double line and views in my Chart of Canton River, where marks are delineated, and directions given for avoiding all the dangers in this locality.

† Views of these hills, by Captain Moffat, with marks for avoiding Brunswick Rock, have been given in my Chart of Canton River.

10 feet at low water, spring tides. There are 4, 5, and 6 fathoms within a short distance of this shoal; the cross bearings are, Tree pagoda W. N.W., north shore pagoda N. E. The mark for clearing it is the south extremity of the hills on the northern side the river at the upper end of the reach, clear open of all the land of Whampoa Island. The next danger is a cluster of rocks near the east point of the entrance of French River, on which the Henry Addington struck in 1814; they are covered at half-flood, and there are $4\frac{1}{2}$ and 5 fathoms close to them. The mark for clearing these rocks is a remarkably round hill at the upper part of the reach, kept well open of French Island: this hill is very conspicuous, and is the northernmost of the hills on the south shore. The entrance of French River is shoal, and should not be approached at half-ebb nearer than pointed out by this mark. After passing French River, the water deepens to 6 and 7 fathoms, and there are 4 and $4\frac{1}{2}$ fathoms close to the south shore; but you must be careful not to moor near a bank formed over the wreck of a French ship, burnt to the water's edge 60 years ago, which has 5 and 6 fathoms close to it, and only 16 and 17 feet over it at low water. Light ships may swing over it, but as they deepen by taking in cargo, they will hang upon it, which the Earl Spencer did in 1814; and some anchors have been lost by hooking this wreck. The bearings for it are Tree pagoda N. by E., Whampoa pagoda N.W. $\frac{1}{4}$ N.*

CHINA, SOUTH COAST, FROM THE LEMA CHANNEL TO AMOY.†

Nine Pin Rock.

NINE PIN ROCK, so named from its form, lying to the N. N. Eastward of the entrance to Lema Channel, is in lat. 22° $16\frac{1}{2}'$ N., lon. 114° 22′ E., distant 6 miles from Waglan; a short distance to the westward of the rock there are two small but high islands, named Wo-chow; and about a mile N.W. of the Nine Pin there is a *small rock*, which at high tide is nearly covered. Between the islands and the shore Captain Ross passed twice, and had not less than 15 fathoms water; and once on the outside, he had not less than 16 and 17 fathoms.

Ta-thong-moon Passage.

TAM-TOO ISLAND is distant about $3\frac{1}{4}$ miles N. by W. of Waglan, and $3\frac{1}{2}$ miles to the westward of the Wo-chow Islands, and its south point makes like a peak, with steep cliffs on its eastern side; this point forms the eastern side of the TA-THONG-MOON PASSAGE; the western side being formed by the east side of Hong-kong Island, close to which, and about $1\frac{1}{4}$ miles to the northward of the two green islands, lie two

* The recent operations of H. M. Ships at Canton will have given opportunities for obtaining a much better knowledge of this river than we have hitherto possessed, and much valuable information respecting its present many unknown channels will be furnished by the surveying officers attached to the squadron, but none of that information has yet reached us. Our ships have on several occasions proceeded up to the very walls of Canton and the channels, above the First Bar, to the southward of Danes Island; those on both sides of French Island and that by Junk River on the north side of Whampoa Island, besides several others, have been found navigable.

† Most of the positions along this part of the coast are uncertain.

small rocky islands: between these and the south point of Tam-too there is a rock above water, with 12 fathoms near it. If you wish to proceed up to the Ta-thong-moon Passage from the eastward, steer to the southward of the Wo-chow Islands, then towards the south point of Tam-too, and round it about a quarter of a mile, or in mid-channel between it and the rock, distant $1\frac{1}{4}$ miles to the westward: from hence steer about N. by W. to pass between a bluff point on Hong-kong or the western shore, and a rock above water, which is situated near an island on the eastern shore, and distant from the bluff point one mile. In this route you will have 9 or 10 fathoms, and will perceive a *small opening* or *passage* to the eastward, named by the Chinese Fotow-moon, through which Captain Alves passed.

If you are merely seeking shelter from a gale, secure anchorage will be found a little to the northward of the bluff point, in a bay or harbour extending to the northward, where you may anchor in 5 or 6 fathoms. If proceeding towards Canton River, continue your course beyond the bluff point, to a narrow pass which you will perceive about $1\frac{1}{4}$ miles to the N.W.; this narrow channel, called Ly-ee-moon, is formed between a point of the coast and the N. E. point of Hong-kong; both points are high and steep, and the passage is not quite half a mile broad, with 25 fathoms water in mid-channel. It is rather too narrow for large ships, unless with a fair wind, when they would be through in a few minutes; standing to the westward, the south side, or Hong-Kong rocky shore, is perceived; and to the north-westward the land forms a deep bay, in which is situated the town of Cow-loon. Your course is along the Hong-Kong shore, leaving a large white rock to the northward: the depth will decrease fast, after getting through the narrows, to 8 or 9 fathoms. Do not pass very near the north point of Hong-Kong, which bears about S. by W. from the white rock, as there are some *sunken rocks* lying about $1\frac{1}{2}$ cables' length off the shore. The depths between the white rock and the point are from 7 fathoms near the former, increasing to 10 near the latter. You may anchor hereabout in perfect security against all winds, and no doubt may procure refreshments from the town of Cow-loon, which appears populous. If bound to the westward, your course becomes more south-westerly, and should be in mid-channel between the southern shore and a point of land, which is the western one of Cow-loon Bay: do not go nearest to the small woody islet which will be seen on the southern shore, as the water is shoal about it, but keep in mid-channel, or nearest to the northern shore, which hereabout has a very red appearance, and the depth will be 7 and 8 fathoms. On the S.W. point of this red-looking land there is a little temple and a sandy beach; do not pass the point close, but keep $1\frac{1}{2}$ cables' length off, as a flat commences near the point, and extends nearly to Won-chun-chow, which is 2 miles to the N.W. Won-chun-chow is a remarkable island, of a dark red and barren appearance, to the northward of which the piratical fleet, used to refit, and where they received supplies of ammunition and stores in abundance from Canton and Macao. Your course is still westerly, in 6 or 7 fathoms, until nearly between Won-chun-chow and the Hong-Kong shore, which is high land; when, if in a large ship, you should haul to the northward, to pass about half a mile from the western point of Won-chun-chow, and from thence towards a point of land about 2 miles to the westward. In this route you will have 6 or 7 fathoms water, and avoid a mud flat with $3\frac{3}{4}$ fathoms on it at low water, which extends about $1\frac{1}{2}$ miles from the two small green islands near the N.W. point of Hong-Kong. When these islands are to the S. by E., the depth decreases very suddenly to 10 fathoms, and you may then proceed to the southward between Lamma and the islands off the east side of Lantoa, decreasing your depth to 5 fathoms; or you may, with a fair wind and small ship,

Ly-ee-moon Channel.

Sunken Rocks.

go round the north point of Lantoa, through the Cap-sing-moon Passage, and from thence along the northern shore, leaving the Brothers, Saw-chow, and Ton-koo to the southward, then between Lintin and Fan-sy-aek rocks, into the channel leading up the river.

Mirs Bay.

MIRS BAY, called TY-PO-HOY by the Chinese (the S. E. point), is 10 miles to the W.N.W. of the small island named Single Island by Mr. Dalrymple; and this point is in lat. 22° 27′ N., lon. 114° 30′ E. The bay at the entrance is $5\frac{1}{2}$ miles wide, but a large black rock above water, named Gow-tow-pyah, and some other rocks under water to the S.W. of the former, make the entrance for ships about 3 miles wide between the eastern shore and the black rocks.

In Mirs Bay a ship will find good anchorage and shelter from all winds, excepting those from about S. S.W. to South. The depth outside the bay is generally 13 fathoms, decreasing gradually to 8 or 9 fathoms about 5 miles within the entrance. A ship should keep near the eastern side, and when about 3 miles in, or further, may anchor in 8 or 9 fathoms, about half a mile off the shore. In passing along the eastern shore, (Fresh water.) you will perceive a remarkable water-course on the high land, and find plenty of good fresh water in the second small bay from the S. E. point. Well within the bay, there is an island named Peng-chow, of green appearance, having steep cliffs about its southern part; between this island and the northern shore, Captain Ross found 7 fathoms water on mud bottom, affording good anchorage when blowing hard from southward; if you intend to anchor hereabout, keep from the N. E. point of Peng-chow, it being rocky to the distance of $1\frac{1}{2}$ cables' length. There are a few small villages in the bay, one of which is named Namo, and another Suilo-shaw, from whence numerous boats came off with people to look at the ships: all over the inner part of Mirs Bay there are many single fishing stakes in 9 and 10 fathoms. (Tides.) High water at 9 hours on full and change of moon. (Gow-tow-pyah.) GOW-TOW-PYAH* is a large black rock above water, at the entrance, and about mid-channel between the east and west sides of Mirs Bay; a short distance to the S.W. of the black rock there are other rocks that dry at low tide, and that generally have breakers on them; between these latter rocks and the western shore there is a channel $1\frac{1}{4}$ miles wide, having 10 fathoms water in it. From Gow-tow-pyah, towards the Nine Pin Rock, the western shore is generally high, and of a craggy appearance, but apparently free of danger.

As the ebb tide runs from Mirs Bay along the western shore, a ship with a S.W. wind will work down speedily by keeping near it, and passing between the Wo-chow Islands and Tam-too; but as soon as the Lema Channel is open, she will meet the strong and constant set to the eastward. The Antelope was two days, in August, 1807, endeavouring to get into the Lema Channel from eastward, and rounded Waglan close each time; but finding a continued strong set to the eastward, was obliged to beat through between Wo-chow and the S. E. point of Hong-Kong.

During the month of August and part of September, if a ship get to the eastward of the Lemas she will find it very difficult to proceed along shore to the westward, if the wind is from that quarter; she ought, therefore, either to stand off to the southward again two or three days, if near the full or change of moon, when bad weather may be apprehended; or anchor in Mirs or Harlem Bay for an easterly wind, which in these months usually happens every few days, close in with the coast.

* Bullock's Head Rock, or Islet.

CHUENG-CHOW, or SINGLE ISLAND, in lat. 22° 25′ N., lon. 114° 40′ East, is small and high, and is the southernmost of three islands which front the peninsula that separates Mirs Bay from Ty-poong Harbour. From Chueng-chow the north end of Great Lema bears S.W., distant 28 miles; Pedra Branca E. by S., distant about 26 miles; and Mendoza Island N. E. by E. $11\frac{1}{4}$ miles: there are 16 and 17 fathoms water to the southward and westward of the island, about a mile distant: here, in August and September, was observed a constant set of the current of $1\frac{1}{2}$ and 2 knots per hour to the eastward, particularly when the wind was westerly. About $1\frac{1}{2}$ miles to the northward of Chueng-chow there is a narrow and barren-looking island, extending in a N. E. and S.W. direction about $1\frac{3}{4}$ miles, and it is the *middle island* of this group. On the northern side of it there are a few fishing huts, and in the channel between it and Chueng-chow there are 16 and 17 fathoms water; but it is rendered unsafe by a rock, having but 2 fathoms water on it, distant to the N. N. E. of Chueng-chow about a little more than a mile. To the northward of Middle Island, and separated from it by a narrow channel, is the largest island of the three which form the group, named Toonee-ang; it is the highest near the western end, where is a small fishing village, the station of a petty mandarin; off the N. W. end of the island lie three rocky islets, and a bed of rocks covered in high tides, having generally breakers; between these rocks and the main there is a channel a mile in breadth, with 13 and 14 fathoms water. The highest part of Toonee-ang is in lat. 22° 28′ 10″ N., lon. 114° 38′ E. About two-thirds of a mile N. E. of Chueng-chow lies Acoong-chow, a high white rock, with deep water near it, to the southward and eastward; and half a mile northward of it there is a sunken rock, covered only with 2 fathoms water.

Chueng-chow. Middle Island. Toonee-ang Island. Acoong-chow.

TWO SUNKEN ROCKS lie to the N. E. of Toonee-ang Island, and being only visible at low spring tides, are very dangerous, the soundings affording no guide when near them, and unless with a swell they shew no breakers. From the largest rock, Acoong-chow, the white rock near Chueng-chow bore S. 8° W., distant $5\frac{3}{4}$ miles; the centre of Chueng-chow S. 11° W.; the highest part or peak of Toonee-ang Island S. 47° W.; the gap in the Island Tsincoe N. 81° E., distant $8\frac{1}{3}$ miles; the centre of Mendoza Island East, and distant from its west end $7\frac{3}{4}$ miles; Pyramid Point on Loo-kaup Island N. 33° W., distant $3\frac{1}{2}$ miles. About a quarter of a mile to the westward of the large rock there is a small one never visible; they have 9 and 10 fathoms water over a muddy bottom close around them.

Dangerous Sunken Rocks.

LOO-KAUP ISLAND lies about 2 miles off the N. E. point of the peninsula which forms the west side of Mirs Bay; it is the largest and the southernmost island of the group, which extends from it to the northward, and sheltered by Ty-poong outer harbour to the eastward. Its south point, called Pyramid Point on account of the pyramidal rocks near it, bears from Acoong-chow or White Rock N. $\frac{3}{4}$ W. 9 miles, and from the small island off the west side of Mendoza Island W. by N. $\frac{1}{2}$ N. To the eastward of Loo-kaup there are two small islands, and on the western side four, with some rocks above water; near which no danger appears but what is visible; close to the south point of Loo-kaup there are 9 and 10 fathoms water. To the westward of the latter island there is a safe passage, 2 miles in breadth, having 9 and 10 fathoms water, leading to Ty-poong Harbour.

Loo-kaup Island. Passage to the westward leading to Ty-poong Harbour.

TY-POONG HARBOUR, named from the small city on its northern shore, is situated on the west side of Bias Bay, about 6 miles westward of Loo-kaup; and

Ty-poong Harbour.

although rather contracted, it is capable of affording good shelter for small ships, about $1\frac{1}{2}$ miles within the entrance; but beyond that distance it is shoal, only fit for boats.

Directions to sail into it.

If you intend to proceed into Ty-poong Harbour, and are near Chueng-chow, or Acoong-chow, pass the latter to the eastward at any convenient distance, steering to N. N.W. to pass the east point of Toonee-ang; remembering that about half a mile North of Acoong-chow there is a rock with 2 fathoms water on it, and N. $\frac{3}{4}$ E. $5\frac{3}{4}$ miles from the same island lie two sunken rocks; therefore, your course must be so directed, that when passing the east end of Toonee-ang, you may have Acoong-chow to bear South, and nothing to the westward of that bearing. The sunken rocks are $2\frac{3}{4}$ miles to the N. E. of the east point of Toonee-ang, and when you have the summit of Mendoza Island to the southward of East, you are to the northward of them; continue your course between Loo-kaup and the western shore, which is high land, and when between them you will perceive the western shore trend more to the westward about 4 miles, to a rocky point of land which forms the southern side the entrance to Ty-poong: between this rocky point and the one opposite Pyramid Point are several sandy beaches, and houses on the western shore. Your course is towards the south point of the entrance, carrying from 10 to $8\frac{1}{2}$ and 7 fathoms water; the space between Loo-kaup and the western shore is free of danger, having 7 and 8 fathoms water: you must not round the southern side of the harbour farther off than three-quarters of a mile, but as much within that distance as you think proper, there being a reef of rocks extending off the northern shore, opposite the south point. You will have 5 and 6 fathoms in rounding the point, after which keep about half a mile off the western shore until you have got in about $1\frac{1}{2}$ miles, and arrived abreast of a bay, with a sandy beach, and large village a little way in shore. The western extreme of this bay is a high bluff point, from which the land turns more to the southward, and forms the bottom of the harbour; you must not go to the westward of this point, but anchor about half a mile to the northward of it, in 4 fathoms, sand and mud. The Antelope anchored in 5 fathoms, with Pyramid Point on Loo-kaup bearing E. $\frac{1}{2}$ S., and the city of Ty-poong N.W., distant off the southern shore about three-quarters of a mile; she did not communicate with the city, but no doubt, like all other places on the coast, a small present accompanying an application to the mandarin will insure your procuring refreshments.

Tides.

In the space between Loo-kaup Island and Ty-poong Harbour, particularly near the latter, there are many single fishing stakes, some of which, at high water, are not more than 3 feet above the surface; therefore, care should be taken not to run them down: the tide is not strong, but, from the numerous little channels and islands, it is very irregular in its course, and rises 6 or 8 feet. In the Bay or *Outer Harbour* of Ty-poong, about 4 miles to the westward of Loo-kaup, there is good anchorage in 7 or 8 fathoms, mud, where a large ship will be completely sheltered from southerly winds; and it is very little exposed to any winds except those which blow at E. or E. S. E., which must force in a considerable swell.

Chuen-poon-chow.

To the N.N.E. of Loo-kaup, at a short distance, and nearly East from Ty-poong Harbour, lies CHUEN-POON-CHOW, a three-peaked remarkable rock; from Ty-poong Harbour you may pass on either side this rock in 7 and 8 fathoms, if you wish to proceed to the eastward into another bay or harbour.

Loo-kaup-sye.

To the northward of Lo-kaup Island lies LOO-KAUP-SYE,* a small island; and the channel between them is safe, there being no dangers but what are visible: close off

* Sye, *i. e.* little.

the west end of Loo-kaup-sye, there is a small patch of rocks above water, with a large single one on it: on the north side the island there are fishing huts.

MENDOZA ISLAND, in lat. 22° 31′ N., lon. 114° 51′ E., bearing from Pedra Branca N.W. by W., distant 19 miles, is high, and steep to, having 12 or 14 fathoms water around; and very close to its west end there is a small island, which cannot be distinguished from the larger, when to the westward of them; Mendoza Island is not inhabited. About a mile northward of Mendoza Island lies TSINCOE ISLAND, which is small, but very remarkable, from having a gap nearly in the centre; there is no danger near this island, there being 12 fathoms water in the channel between it and Mendoza Island, and 9 fathoms to the northward. MIDDLE ROCKS, bearing nearly West from the extreme of Fokai Point, are considerably above the sea level, with deep water round them, and no hidden danger: about a mile N. by E. ½ E. from these rocks, and near the shore, lies Fisherman Island, which is small, having a rocky reef between it and the shore. FOKAI POINT, bearing N. 52° E. from Mendoza Island, distant 2½ miles, is the extremity of a high promontory; the land is high near the point, and from its being connected with the adjoining high land by a low narrow isthmus, has the appearance of an island when viewed from eastward or westward. On the first hill from the extreme point there is a fort, named TY-SING, or GREAT STAR; there are several pieces of cannon mounted on it, but, like most of the forts on this coast, it appears to be in a ruinous state.

Mendoza Island. Tsincoe. Middle Rocks. Fokai Point. Ty-sing Fort.

HARLEM BAY, called PING-HOI by the Chinese, is formed to the westward of the high part of Fokai, and to the northward of Mendoza, and the other small islands; it cannot be considered a safe place for a ship to ride during a Ty-foong, when the winds are liable to shift suddenly to different points of the compass, but affords tolerable shelter from a N.E. or Easterly gale. The Antelope, riding in 5 fathoms, as close as a ship could go, when blowing a gale from East, not only experienced strong gusts of wind from over the low isthmus, but a heavy sea tumbling in round Fokai Point, and acting across the wind, made her roll very deep, and obliged Captain Ross to weigh and run for another anchorage. He therefore recommends to navigators, when a Ty-foong is apprehended, not to seek shelter in Harlem Bay, but to proceed about 9 or 10 miles more westerly, to a large and safe harbour, situated in the place assigned to Bias Bay, which will be hereafter described.

Harlem Bay, or Ping-hoi.

Off the western point of Harlem Bay are some rocks above water, one of which is very conspicuous, and has a white appearance, from which circumstance the point bears the name of White Rock Point.

If you are coming from the eastward and bound for Harlem Bay, round Fokai Point in 13 or 14 fathoms, about a quarter of a mile off, and after rounding the point, either haul up along the eastern shore, or pass between it and Middle Rocks, carrying 7 and 8 fathoms water through, or pass between Middle Rocks and Tsincoe Island, carrying 10 and 11 fathoms: if the wind is easterly, it will perhaps be best in a small ship to adopt the first-mentioned passage, as she will fetch the anchorage without tacking; but in a large ship, go to the westward of the Middle Rocks, although you should have to make a tack, as in this channel you will be far enough from the high land to avoid the variable flaws of wind, and the disagreeable consequences that might arise from being baffled in a narrow channel. If you proceed to the eastward of the Middle Rocks, remember that about North from them, and West from Fisherman Island about a third of a mile, there is a *small rocky patch*, with 4 fathoms on it at

low water. The bearings at the anchorage in Harlem Bay, in 5 fathoms, were, a small pagoda on a little hill above the circular fort E. by S. ½ S., Fisherman Island S. by E. ½ E., about a mile distant, Middle Rocks South nearly 2 miles, Tsincoe Island S. by W. ¼ W.*

Close to where the low isthmus joins the high land of Fokai Point, there is a creek; it is very shoal, and almost dry about the entrance at low water, although large merchant vessels and war boats are sometimes laid up in the creek. From the summit of Tsincoe Island, a city is visible a short distance inland, said to be Ping-hoi, and it is stated that the creek goes up near to it: on the western side of Fokai Point there is a village, which no doubt could furnish refreshments if wanted. Fokai Point is in lat. 22° 33′ N., lon. 114° 53′ E., distant about 20 miles N. W. ¼ N. from Pedra Branca. The fleet of European ships touched at this bay December 28th, 1804, on their passage from England round Australia to Canton River.

Fokai Point.

About a mile due West of White Rock Point, the western point of Harbour Bay, is Woong-mow Island, with a rock above water off its S. E. end, and another off its north end. Between Woong-mow Island and Pyramid Point to the westward there is an entrance of 3 miles wide leading into a deep and safe harbour, named Bias Bay by Europeans, and Ty-lo-so by the Chinese: it extends northward about 9 miles from Woong-mow, and is 4½ miles broad, formed by high land on the northern and eastern sides, and having numerous small islands on the western, which divide it from Ty-poong Harbour: the depth is 10 fathoms at the entrance, gradually decreasing as you run up to the northward, or haul towards the eastern shore.

Bias Bay.

Directions for going into Bias Bay.

If in coming from the eastward you intend to enter Bias Bay, pass round Mendoza Island at a mile distance, and from the western part of the island steer N.W. by W., or W. N.W., for the opening between Pyramid Point and Woong-mow; as before stated, there is a large rock above water a little to the S. E. of Woong-mow. From Mendoza Island to the entrance of Bias Bay, the depth will be from 13 to 10 and 9½ fathoms, on a muddy bottom; if the wind will not allow you to steer for the entrance, and if it should become necessary to turn, remember, there are two sunken rocks 7¾ miles West from Mendoza Island; therefore, when standing in that direction, do not go farther West than to bring Woong-mow N. ¼ E. until you have brought Tsincoe Island to the southward of East; another mark is, not to bring Acoong-chow Rock to the southward of S. by W. ½ W. when you are standing to the westward; these sunken rocks are the only dangers requiring caution. Having arrived between Woong-mow and Pyramid Point, if the wind is easterly, pass nearest to the former in 9 fathoms water, and from thence steer North: you will then perceive a small island, called Sam-coke, near the eastern shore, about 2¼ miles above Woong-mow; its surface much covered with long grass and detached black rocks. Between it and Woong-mow, but nearest to the latter, there is a small rock even with the surface at high tide, and the ground is not clear close round the rock. Proceeding up the harbour, you have regular soundings, from 9 fathoms decreasing gradually, and will observe several sandy beaches on the east side, and the remarkable rock named

* In 1810 Captain Wainwright, in H.M.S. Chiffone, rode out an easterly gale in Harlem Bay, and was of opinion that a rock lay in the passage between Mendoza Island and Middle Rocks, as a high breaker was seen in that direction at times, but it could not be found by the boats. Captain Ross also searched for it, and worked about that part in the vessel, and had never less than 10 or 11 fathoms water; he also made inquiries of the numerous fishermen who are always employed about that spot, but none of them knew of any rock being there; it is therefore probable, that the breaker proceeded from the ebb tide running out of Bias Harbour, between Mendoza Island and Tsincoe, which meets the strong current that generally runs to the westward along the coast, when the wind blows from the eastward.

Chueng-poon-chow to the westward, which lies in the passage leading towards Ty-poong Harbour: continue your course above Sam-coke Island, and the point that is about $1\frac{1}{3}$ miles to the northward of it, after which you may anchor anywhere between this last-mentioned point and two small green islands, called Tsang-chow, situated to the northward near the shore. You will find $5\frac{1}{2}$ fathoms or 5 fathoms, mud, a good berth, about $1\frac{1}{2}$ miles off the eastern side of the bay, where you are land-locked, and distant $4\frac{1}{2}$ miles above Woong-mow, bearing S. or S. $\frac{1}{2}$ E. On the eastern shore there are several populous villages, where no doubt refreshments can be obtained. If the wind is unfavourable for making a direct course up the harbour, you may turn up, there being no danger, gradually decreasing the depth when standing to the eastward, and increasing it when standing to the West towards the islands. There are numbers of stages erected about the harbour, consisting of two large spars driven into the ground about 10 feet asunder, having a winch on them with which the fishermen heave up their nets; be careful and not run them down, as, besides distressing the owner, they are strong enough to injure your copper and sheathing.

TSANG-CHOW, or GREEN ISLANDS, are $8\frac{1}{2}$ miles above Woong-mow; in the narrow channel to the eastward of them there are only 2 fathoms water; to the westward of them there are 5 fathoms, to the northward $3\frac{1}{2}$ and 3 fathoms in the middle, decreasing to either shore; this appears to be an excellent place for a small ship to repair damages. On the northern shore of the inlet, about 3 miles up, is the town or city of Fan-lo-kong, which is the residence of a mandarin of some rank, perhaps the third or fourth order.* Tsang-chow.

About 4 miles to the W. N.W. of the two small Islands Tsang-chow there is a tall pagoda on a small green island, near the northern shore.

HONG-HAI BAY, about 6 leagues to the N. Eastward of Fokai Point, is extensive; but in the upper part the water shoals to 3 or 4 fathoms, and it is entirely open to S.W. and South winds. There are several islands in this bay, the largest of which, Hong-hai, lies in the middle of it; the town of this name and the large town of Ty-sammee are on the east side, where there is a harbour for salt junks, with 2 fathoms water on the bar, at the upper part. There are two sharp rocky islets, named Toong-teng and Sy-teng, at the entrance of the bay, $1\frac{1}{2}$ miles N. N. E. and S. S.W. of each other, and about 6 miles S.W. of them lies a *white rock*,† called Pauk Pyah by the Chinese, flat at top, and of moderate height, which bears East from Fokai Point $7\frac{3}{4}$ miles; and $1\frac{3}{4}$ miles S. S.W. of it, there is a sunken rock shewing only breakers in a high sea, with 13 fathoms water close to it; and breakers were seen a little way to the North and N. E. of Toong-teng and Sy-teng, when the sea ran high. The passage between Fokai Point and these rocks is safe, with 12 and 13 fathoms water, and 10 or 11 Hong-hai Bay. Adjacent Islands, and coast.

* The Antelope procured a large supply of poultry, some bullocks, vegetables, &c., at this place, through the interpreter, all of which he no doubt procured at a cheap rate. Europeans must, however, always lay their account at paying the Canton Compradore's price, if they employ a Chinese to purchase for them, as they seem to think themselves bound to prevent your getting it cheaper, and although they do not benefit themselves, will instruct the seller as to the price he should demand, satisfied that he has made you pay so much of your money to one of his countrymen.

This remark was made by Capt. Ross, who did not land himself at this place, and it is chiefly from the accurate survey of the South Coast of China, by this able officer, and his coadjutor, Capt. Maughan, that the foregoing instructions have been given to navigators.

† This rock has sometimes been mistaken for Pedra Branca, but it bears from the latter N. $21\frac{1}{2}$° W., distant $15\frac{1}{4}$ miles.

fathoms between them and the two rocky islets mentioned above; it shoals to 6 fathoms close to Hong-hai Island. If obliged to pass in shore, either go to the northward of the White Rock, or at least three miles to the southward.

Pedra Branca. TY-SING-CHAM, or PEDRA BRANCA, in lat. 22° 19½′ N., lon. 115° 7¾′ E., bearing from the Fokai Point S. E. ¼ S., distant 19 miles, or 49 miles eastward of the east end of Great Lema,* fronts the western part of Hong-hai Bay, being about 5 leagues to the S. S. Eastward of the other white rock, at the entrance of that bay. When bearing North, it appears separated into two rocks, and the summit is of a white colour; it is bold to approach, having 20 fathoms close to the outside, and 19 or 18 fathoms on the north side, decreasing to 13 fathoms near the other white rock mentioned above, in the channel between them, which is wide and safe. The depths increase regularly in the offing, to 40 fathoms about 10 or 11 leagues to the southward of Pedra Branca.

Ty-Sammee Inlet, TY-SAMMEE INLET, in lat. 22° 46′ N., distant 10 leagues about N. N. E. from Pedra Branca, is formed on the western side the high land of Kin-ngao West Point: the Antelope anchored in 5 fathoms at this place, close to a sandy point on the starboard side abreast the town; the anchorage was very confined, and the entrance shoal some distance off, having only 3¼ fathoms at high water; a reef of rocks extends also nearly two miles to the westward, off the southward side of the entrance.

and coast. Kin-ngoa West Point forms the eastern outer entrance point of Hong-hai Bay; fronting it to the south eastward there are three islands, with rocks near them; the depths a little way outside these islands are 10 and 11 fathoms, and they should not be approached under the latter depths. The coast in some places near the sea is low and sandy, but betwixt Mirs Bay and this place the country inland is generally high, with many hills, of similar appearance to each other. Mostly all the hills and islands on the coast have a steep, rocky, and sterile appearance, although some of them are crowned with verdure.

Sha-long-tow. SHA-LONG-TOW, or Kin-ngao East Point, in lat. 22° 39′ N., lon. 115° 35′ E., forming the western extremity of Hie-che-tchin Bay, is very remarkable, of moderate height, composed of red sand, with many rugged rocks scattered over it. The point has two islets and a reef off it, with 13 fathoms within a mile of the outer islet. At a little distance on the western side the point is a small battery, many of which are seen along this coast, no doubt intended for the protection of the fishing boats against the pirates. To the westward of Sha-long-tow the land is mountainous, forming several bays, with beaches, and extends 11 miles about W. by N. to Kin-ngao West Point, which is high and bluff. About 5 miles W. by S. of Sha-long-tow Point there is a cluster of rocks above water, and about 3 miles N.W. of these lies another cluster: close around the first cluster 10 fathoms water was found on a mud bottom, but several other rocks are detached between them and the shore, rendering the passage unsafe between the two clusters of rocks. If proceeding from this point to the westward in the night, by preserving 16 fathoms water, you will pass between Pauk Pyah and Pedra Branca in mid-channel: the latter bears from Sha-long-tow S. W. ½ W., distant 32½ miles.

* By Capt. Ross, in his survey of this coast, who determined its situation by a series of triangles from Macao, together with repeated measurements by good chronometers.

HIE-CHE-TCHIN BAY, or KHEE-SEAK BAY, formed by Sha-long-tow Point on the West, and by Teng-mee on the East, extends a considerable way inland to the northward, with depths of 7 to 5 and 6 fathoms, and 3 or $3\frac{1}{2}$ fathoms at the upper part. It affords shelter from westerly and northerly winds, and from the North-east Monsoon; but is exposed to south-easterly and southerly winds. Khee-seak City lies a little inland, about 5 miles within the east point of the bay, called Teng-mee by the fishermen, and this point is fronted by two remarkable white rocks; the first, called Toong-cat, lies to the S. S. E. about a mile off, and Sy-cat or Khee-seak, the other rock, lies about 3 miles to the S. Westward, having 11 and 12 fathoms water between them. The Investigator passed between Toong-cat and a reef which projects from the shore in 10 fathoms water. Hie-che-tchin Bay.

Teng-mee, in lat. 22° 45′ N., lon. 115° 50′ E., is a high point of land, bearing E. N. E. from Shah-long-tow, distant 15 miles, and forming the eastern point of the Great Bay of Hie-che-tchin. On the west side of this bay, about $4\frac{1}{4}$ miles N. E. by N. of Sha-long-tow, is the remarkable little rocky island of Kimsue or Kemsue, between which and the land to the westward was found a safe channel of 7 and 8 fathoms water: hereabout a ship will find good anchorage, if merely waiting for a westerly or south-westerly gale to blow over. About $1\frac{1}{4}$ miles N. N.W. of Kemsue lies a cluster of rocks, between which and the island we found 6 and 7 fathoms water, and a short distance to the northward of the rock there is a projecting point of land of moderate height, with numerous rocks scattered over its surface: this forms the southern point of a little bay and port farther westward; the point is called Passaó, or Pauk-sha-oo, that being the name of the little bay between it and another high point having a high battery on it; all the sides of this bay are formed by sand hills. Between the Battery Point and the high land to the northward there is an opening into a deep harbour to the westward: the entrance of this is nearly barred by rocks, and the harbour too shoal for vessels drawing above 8 feet water; but between the battery and Passaó Points we anchored several times in 3 and $3\frac{1}{2}$ fathoms in the Discovery, when it was blowing strong from southward. Saw no danger hereabout, excepting a little rock under water, distant about 100 yards N. E. of Passaó Point. The bottom of the Great Bay is $11\frac{1}{2}$ miles from the bearing line of the two extreme points, and is formed of low land with a sandy beach; near the eastern part of this beach there is a small branch of a river or creek, and the country, when viewed from an elevation, appeared populous and well cultivated. The eastern side of the Great Bay is formed by high mountainous land, and about 5 miles within Teng-mee Point there are several white rocks detached a little from the shore: near these rocks we anchored in the Discovery, when twice compelled to ride out heavy easterly gales, but, owing to a heavy sea rolling in from the southward, we found it very unpleasant riding. Teng-mee. Passaó Point.

A short distance round Teng-mee Point to the westward there is a fort, and in the Little Bay near it, called by the fishermen Chinó, a squadron of war boats are stationed; these boats are obliged to run over to the shoal harbour on the western side whenever the wind blows strong.

The soundings all over the Great Bay are very regular, under 12 fathoms, gradually decreasing from across the entrance to the shores within; the bottom is soft mud, excepting just within Teng-mee Point, where it is rocky a little way, and should not be passed at less than a mile from the land.

CUP-CHEE-SEN, in lat. 22° $49\frac{1}{2}$′ N., lon. 116° 7′ E., is a broken point of land, very Cup-chee-san.

rocky, and has several detached rocks lying $1\frac{1}{2}$ miles to the southward; this point bears from Teng-mee Point E. by N. $\frac{1}{4}$ N., distant 17 miles, and about half-way between them there is a cluster of rock a little detached from the shore. Opposite the rocks there is the entrance into a small river or creek, with a tower, which the Chinese named Oo-tong; there were numerous fishing boats up this river. Close to the westward of Cup-chee-san there is another small branch of a river; from the ship we could see the walls of Cup-chee City, and two or three tall pagodas a little way up. This appears a place of consequence, as several junks' masts were seen, and numerous other smaller vessels; but it does not afford any shelter for European vessels. Close in to the forts which defend the entrance of the river, the water is very shoal, and the entrance narrow; it must, therefore, be only at high water that the junks can pass in or out: there are some detached rocks about the bay. In passing between Teng-mee Point and Cup-chee, soundings of 9 and 10 fathoms were very regular at 3 miles' distance from the shore; and close to the detached rocks off the latter point had 11 and 12 fathoms water.

Black Mount. BLACK MOUNT, in lat. 22° $52\frac{1}{2}$′ N., lon. 116° 11′ E., is a remarkable little black conical hill, about $4\frac{1}{2}$ miles to the N. E. of Cup-chee Point; it is a little way from the beach, and on a down of red sand.

Breaker Point. BREAKER POINT, in lat. 22° 57′ N., lon. 116° 31′ E., is low and rocky, having within it some hummocks of black rocks and red sand. From this point the coast begins to trend more northerly, and ships passing it should keep about 2 miles off, as the ground near it is in some parts foul. Breaker Point bears from Cup-chee Point E. by N. $\frac{3}{4}$ N., distant 23 miles; in the bottom of a bay about mid-way between them there is a large town, with two tall pagodas on the hills, where numerous fishing vessels were seen in a creek or inlet near the town. From Cup-chee Point direct towards Breaker Point, we had very regular soundings of 10 and 11 fathoms: and in passing round the Great Bay, had 7 and 8 fathoms. Between the Black Mount and the town is one continued high sandy beach: a short distance on both sides of Breaker Point are small batteries; and in a little bay, 4 miles to the N. N. E., there is an inlet or creek, with the walled town of Ching-hai, or Ching-hae.

Ma-urh Point. MA-URH, or Horse Ear Point, called the CAPE OF GOOD HOPE by European navigators, is in lat. 23° $13\frac{3}{4}$′ N., lon. 116° 50′ E., bearing from Breaker Point N. E., distant 8 leagues, of moderate height, and has near to it 11 and 12 fathoms water.

Ma-urh Point has several small batteries around, and about 3 miles to the W. N.W. of it is the inlet of Ma-urh-gaou, or Horse Ear Harbour, with the town on its western bank. About 8 miles W. S.W. of Ma-urh Point there is a high projecting point of the coast, having a few rocks about half a mile off it, and the hill itself is very rocky. About 2 miles westward of the point lies the entrance of a small river or inlet, called by the Chinese fishermen Hae-mun,* or Hai-moon, on the east side of which the walls of the city were seen; this is the third place from Macao where the Chinese have a few war boats stationed. In passing from Breaker Point along the shore northward, at the distance of a mile in some places, and at others about 2 miles off, had very regular soundings from 14 fathoms, gradually decreasing to 9 fathoms off Hae-mun Point. In Hae-mun Bay, to the southward of Hae-mun Point about 3 miles,

* Sea-gate or Passage.

is Merope small Rocky Bank, about 1 or $1\frac{1}{4}$ miles off shore, having $1\frac{1}{2}$, 2, and $2\frac{1}{2}$ fathoms water on it. It was discovered by Captain Parkyn, in the Merope, belonging to Calcutta, which ship struck hard and passed over it, March 4th, 1824; it lies in the stream of 5 fathoms, and has 4 fathoms, soft ground, between it and the shore. The coast eastward of Ma-urh Point (Cape of Good Hope) trends North and N.N.W., and soon becomes so low as not to be visible at a few leagues' distance, but there are high mountains in the interior. The City of Ching-hae-heen, a place of much trade, stands on the shore about $3\frac{1}{2}$ or 4 leagues to the North of Horse Ear Point. Merope Bank.

Nearly North from the latter point there is a small round island, with a tall pagoda on it, in lat. 23° $26\frac{1}{4}'$ N.; and $2\frac{1}{2}$ miles farther eastward there is another irregular-shaped island, with a fort on it. Between the latter island and the western point of Nan-gaou Island is formed the western entrance of a strait, through which numerous coasters daily pass, conveying the trade between the eastern and western provinces.

NAMOA or LAMO ISLAND, called also NAN-GAOU or South Harbour, the western point of which is in lat. 23° 28′ N., lon. 116° $59\frac{1}{2}'$ E., and the N. E. point in lat. 23° 32′ N., lon. 117° 13′ E., is formed by two high mountains, connected by a low isthmus, a third of its length from the western point. The principal town, Nan-gaou, is in a bay on its north side, near the eastern extreme; a Mandarin of rank resides here with a squadron of war boats at his command. There are two small islands in the eastern part of this bay, and on the largest there is a fort. In entering the strait from the westward, we pass over a sand-bank at low water spring tide, about 4 miles to the southward of Namoa West Point, carrying $4\frac{1}{4}$ fathoms about 2 miles; then deepened into 5, 6, and 7 fathoms as we entered. When we anchored in $4\frac{1}{4}$ fathoms on the bank, to allow our boat to sound around us, the pagoda on the island bore N. 69° W., Outer Lamock Island S. 71° E., and the summit of Ma-urh S. 40° W. The boat had only $3\frac{1}{2}$ fathoms water to the westward, yet all the large junks were observed to pass that way. A line of fishing stakes extends a long way from the West Point of Namoa, towards a small high island situated $2\frac{1}{2}$ miles to the N.W. There are several openings for vessels to pass through, but a ship should adopt one in mid-channel, as a mud flat extends a short distance off the north side of Namoa, close to the eastward of the fishing stakes. A watering place was found on the north side, at the beach nearest the west end of the island; and there is a small island nearly in the middle of the bay, which is formed to the northward of the low isthmus: we passed between this and a cluster of rocks to the northward, and found the channel safe, with good soundings of 6 and 7 fathoms, excepting a little to the eastward of the small island; where at low water we had 4 fathoms on a muddy bottom. Namoa Island.

Nan-gaou appears to be an excellent anchorage for ships of any size; a plan of it is given in my chart of the eastern coast of China.

THE LAMOCK ISLANDS consist of three islands and a large rock, the latter being the northernmost; they extend four miles N. E. by N. and S. E. by S., and a reef, having some of the rocks above water, extends nearly 5 miles to the S.W. of the southern island. The largest, which is the S.W. island of the group, is in lat. 23° 17′ N., lon. 117° 21′ E. We passed close along the S. E. side of this reef and the islands, in 19 and 20 fathoms, soft ground; and once, when blowing fresh with a heavy swell, we passed between the Lamock Islands and four other smaller islands lying near Namoa, and called in the old charts the Lamon Islands; in this passage, we were very close to a Lamock Islands.

rock under water, on which the sea seldom broke, and, as there may be other rocks hereabout, a ship should not pursue this route until it is better examined. The Auspicious, in April, 1807, passed betwixt Namoa Island and the other groups in the offing, and had pretty regular soundings; but care is necessary to avoid a reef of rocks even with the water's edge, which lies off the east end of Namoa.

Dangers appear to extend as far as 6 miles off the south side of Namoa Islands; that is, nearly half-way across the channel, towards Lamock S.W. reef. The soundings hitherto obtained in and near this channel are from 10 to 16 fathoms; there is, however, a 5 fathom patch about 4 miles off the east side of Namoa, and a Dangerous Rock two miles South of the patch; the rock lies between 8 and 9 miles N. N. E. of the S.W. Lamock Island.

A ship passing outside the Lamock Islands in the night should not come under 24 fathoms towards their eastern side, where is the deepest water, but the soundings are not regular.

The Merope, Captain Parkyn, in 1824, had regular soundings of 7, 6½, to 8 fathoms, between the northern part of Namoa Island and the coast, within 3 and 4 miles of the latter; and from having 9 fathoms within 1½ miles of the N. E. point of Namoa, the soundings were between 10 and 15 fathoms for 3 leagues in an easterly direction, till close to the two reefs Dioyu and Chelsieu, which are covered at half-tide, and lie about 2½ or 3 miles from each other, in a N.W. by W. and S. E. by E. direction. The Dioyu reef bears from the N. E. point of Namoa E. N. E., distant about 3 leagues, and Chelsieu bears about E. ¾ N. from the same point, nearly 4 leagues.* The Merope passed between them in 13 and 14 fathoms water; outside of Chelsieu she had the same depths, and inside of Dioyu, within 2 miles of the coast, she had 7 and 8 fathoms regular soundings. There are several deep inlets or bays opposite these reefs to the northward, with depths of 5 and 4 fathoms, and there are small islands in the entrance of some of them. Near to which stands Chulwan Pagoda, in lat. 23° 39′ N., lon. 117° 17′ E.; and to the eastward of those inlets lies Owick Bay, in lat. 23° 41′ N., lon. 117° 32′ E., with the town of this name, having 4 and 5 fathoms water inside the island and point, which form its S. E. extremity; but this bay does not extend far inland. Quinga-chin Village is at the eastern part of the bay, which is sometimes called by this name, as well as by that of Owick.

Reefs. — *Chulwan Pagoda.*

Jocak-ko Point.

JOCAK-KO POINT, in lat. 23° 36½′ N., a little to the E. by N. of the S. E. point of Owick Bay, has two islands near it on the south side, and two fronting it to the eastward, which point and islands are bold to approach, there being 12 and 13 fathoms water close to the point, between it and the two islands that front its eastern extremity; and on the N. E. side there is anchorage in the bay, formed between it and Tung-shan-ying Point. The Brothers lie E. ¾ S. and E. by S. ¼ S. from the former point, about 12 or 13 miles' distance.

Tung-shan-ying Point.

TUNG-SHAN-YING POINT, in lat. 23° 46′ N., lon. 117° 39′ E., bearing from Jocak-ko Point N. E. by N. ½ N., distant about 3¼ or 4 leagues, has the town of the same name on the inside of the point, close to which is the harbour for junks, completely sheltered by the point and Pagoda Island fronting it, with depths of 7 to 4 fathoms, and 12 or 13 fathoms water in the channel formed between the point and island, which is about half a mile wide.

* According to Captain Felix Dayot, these dangers lie more to the southward; bearing between East and E. ¾ N. from the north point of Namoa Island.

About 4½ miles to the eastward of Tung-shan-ying Point is situated Koo-luy-tow (Old Thunder Head), which forms the east point of Tung-shan-ying Bay, with Pagoda Island extending across nearly half the mouth of the bay, formed between these points, which extends considerably inland to the northward, with several islands in it, and good depths of water in some places; for there are 12 fathoms in the western channel, between Tung-shan-ying Point and Pagoda Island; but the eastern channel between the Island and Koo-luy-tow is much wider, being about 1½ miles, with soundings of 18, 17, and 16 fathoms; and directly inside the island, close under it on the north side, there are 8 or 10 fathoms water, where a ship would find shelter from all winds, opposite Tung-shan-ying Town, about 1½ miles distant. To the N.E. of Pagoda Island about 1½ or 2 miles, lie three islands in a N. N.W. and S. S. E. direction, nearly touching each other, and the Sisters, other two islands, about 2 miles farther up the harbour, with breakers near the latter, and shoals in the western part of the harbour: but to the north-eastward there is safe anchorage in 8 to 5 fathoms about a mile off the villages, situated on the sandy shore of the isthmus that joins the high land of Koo-luy-tow to the main.

HOO-TOW-SHAN BAY (Tiger Head Bay), or DANSBORG BAY, in lat. 23° 51′ N., lon. 117° 48′ E., about 2½ or 3 leagues N. E. from Koo-luy-tow, has good anchorage in from 5 to 7 fathoms on the north side of the western point of the entrance, where In-ga village stands. The bay is fronted by several islands, having a safe passage of 8 or 9 fathoms between the N. E. group of three islands, and the S.W. group of five large islands; the shores of these islands are rocky, and there are some contiguous islets. Good water may be got on the west side of Sa-chow, the northernmost of the S.W. group; and anchorage in 10 fathoms, protected from easterly winds: this island extends about a mile North and South, and lies about 2 miles eastward of In-ga Point, the channel between them being safe, with depths of 8 or 9 to 14 or 15 fathoms, and it is the western channel leading into the bay. The entrance of this channel, called Rees Passage, is formed on the west side by a reef that projects nearly 2 miles South from two small isles close together, which lie about half a mile southward of the west point of the bay. The coasting junks pass through the narrow channel on the west side of the reef and small isles, which is formed between them and the point of In-ga. Hoo-tow-shan Bay.

About 1½ miles to the north-westward of the N. E. group lie two reefs, called Goo and Ching, covered at three-quarters flood, with 8 and 10 fathoms water between them, and the same depths between them and the islands. Awo-ta Rock, near the sandy beach, bears from these dangers S. 75° W.

Hoo-tow-shan, or Tiger-head-hill, in lat. 23° 56′ N., and 4 or 5 miles North from the N.E. group, forms the east side of the entrance of the river, leading to Quin-ting city; there is a wide channel of 9 and 10 fathoms water between the islands and Hoo-tow-shan Point, with a sand-bank, partly dry at low water, stretching about 2 miles from the point to the westward: between the extremity of this bank and the shoal water that lines the western shore leading to the river, the channel is about a mile wide, with regular depths of 3½ to 2½ fathoms, and inside the bank the depths increase to 4 and 5 fathoms towards the eastern shore, opposite the village Hoo-tow-shan, where the sand-bank and the contiguous land would shelter vessels of moderate draught from all winds and sea.* Hoo-tow shan.

* A plan of these places is given in my chart of the eastern coast of China.

The Brothers.

THE BROTHERS are two islets, or rocks, distant $2\frac{1}{2}$ miles from each other, in a N.W. and S.E. direction, and about $4\frac{1}{4}$ leagues off shore: the southernmost is in lat. 28° 32′ N., lon. 117° 48′ E., and it bears from the S.W. Lamock Island N. 58° E., distant about $27\frac{1}{2}$ miles; from Koo-luy-tow it bears S. S. E. $\frac{3}{4}$ E., and from In-ga Point S. 6° E. about 16 miles. Close to the southern one there are 24 fathoms, and to the northward of them 20 fathoms water, in a wide channel.

Merope Shoal.

MEROPE SHOAL, in lat. 24° 10′ N., lon. 118° 15′ E., and about 2 leagues to the westward of Chapel Island, appears to have been discovered by Lieutenant Parkyns, R.N., in 1824, when commanding the vessel of that name on a trading voyage from Bengal. The depth found on it was about $2\frac{1}{2}$ to 3 fathoms; but there are rocks said to be dry at low water, with overfalls, extending from the shoal bank to the northward, which are marked on the M. S. chart of the Amherst's voyage in 1832, by Captain T. Rees, in command of that vessel. Between these dangers and Chapel Island the depths are 11 or 12 fathoms, and inside of them from 10 to 8 fathoms near the main land and contiguous islands; either passage being apparently safe. About 3 leagues S.W. from Chapel Island there is a bank of gravel, having 7 fathoms water on it, with 10 and 11 fathoms inside.

Chapel Island.

CHAPEL ISLAND, called Tung-ting-seu, by the Chinese, in lat. 24° $15\frac{1}{2}$′ N., lon. 118° $13\frac{1}{2}$′ E., or 9′ 44″ E. of the S.W. point of Koo-long-seu, lies off Amoy Harbour, and when bearing E. N. E. or W. S. W., a hole through it is perceived: when it bore South, and about mid-channel between it and Amoy Harbour, Captain Ross passed over a sand-bank with 6 fathoms water on it, but no less could be found. According to Captain Collinson, R.N., Chapel Island is level, and probably about 200 feet high, and 3 cables in circumference. When in its neighbourhood, the Pagoda of Nan-tae-woo-shan, which is 1,728 feet above the sea, will be visible over Chung-chow-foo, by which the approach to Amoy may be recognized.

Amoy Harbour.

AMOY HARBOUR,* called by the fishermen Hae-mun, or Hia-men-seu, is a port of great trade between the Eastern and South-western provinces of China.

Sailing directions.

If bound to Amoy, after having rounded Lamock Islands and the Brothers, steer about N.E. by N. for Chapel Island, keeping within 3 or 4 leagues of the coast. With it bearing N. by W. 4 leagues, in 26 fathoms water, a remarkable round hill may be seen on the coast, bearing about N.W. by N.: steer then to pass close to Chapel Island on either side, where the usual depth is 14 or 15 fathoms, if not too near Meropes Shoal, or the islands and banks that lie towards the main. From hence, steer northward for the entrance of the bay or harbour, keeping in 11 or 12 fathoms, and Wooseu-san, called also Great Goeve, a long island in the entrance, will soon be seen, at each end of which there is a rocky hill, and in the middle a sandy bay. To the N.E. stands a pretty high rock, which may be passed on either side, but it is preferable to pass about three-quarters of a mile or a mile to the eastward, in 16 fathoms water. From hence the channel is perceived open, betwixt the Little Goeve (which lies to the northward of the great one), and five islands to the north-eastward; it is about $1\frac{1}{2}$ miles wide, with 12 to 14 fathoms in mid-channel, which is the best track. When through, steer N.W. by N. for the south-west part of Amoy Island, and steer along it within half a mile distance, the soundings being regular. The harbour is situated

* A plan of this harbour is given in the chart of the eastern coast of China; the recent one, from Captain Collinson's survey, is now published by the Admiralty.

to the N. Westward, close to Amoy city, and may be easily discerned by the junks or small vessels at anchor, betwixt the city and the Island Koo-long-seu, fronting it to the westward.

On the south side of the bay is the entrance of Chin-chin River; and outside, to the northward of the entrance, lies the large island and town of Quemoy. Mr. M'Donald, master of H.M.S. Melville, states, that Quemoy Island is considerably larger than generally represented in the charts, and describes the eastern part of the island to be moderately high land; the N.E. part, when first seen on W.N.W. bearing, appeared as three detached round hills to the right of the higher land. The bay and harbour of Amoy are safe for any number of ships, and sheltered from all winds: it is the chief port of the province of Fokien, but foreign ships are not permitted to trade here. At present it seems difficult for a ship touching here to procure articles of any kind:* the mandarins are liable to feel the displeasure of government, if a discovery is made that they have offered any encouragement to induce foreign ships to visit the outports along the coast.

The tide rises from 18 to 20 feet on the springs in the harbour; high water on full and change of moon at 12 hours 30 minutes, by Captain Parkyn's observations in 1824. Tides.

Captain Richard Collinson, R.N., who commanded the Bentinck in the late attack of the fleet on Amoy, and who made a survey of the harbour, gives the following directions for it. Captain Collinson's Directions.

"The harbour of Amoy is easy of access and egress; in the outer harbour there is good holding ground, and unless vessels are badly found in ground tackle, I should conceive no gale of wind could hurt them." Amoy outer harbour.

"In the inner harbour, from the appearance of the rocks and the immediate vicinity of the houses to the beach, I think no great swell ever exists, and it is capable of containing from 60 to 100 vessels. The rise and fall of the tide, from one day's observation on the full moon, in September, 1841, was $14\frac{1}{2}$ feet; at this period, however, the night tide exceeded the day by 2 feet. The change of the depth 3 days after full and change, in all probability, would exceed 16 feet. This would be of infinite importance to vessels requiring repair, particularly as sites for docks, and ample materials for making them, are to be found on the island of Koo-long-seu, as well as in other parts of the harbour." Inner harbour. Tides.

"Chaw-chat, or Kew-tsee-tseao, is a rock nearly level with the water's edge; during our stay, which was at spring tides, it was never covered: it lies N. 22° W. $10\frac{3}{4}$ miles from Chapel Island: when on it, the three chimneys on Woo-seu-shan Island are in a line with the pagoda of Nan-tae-woo-shan, bearing S. 82° W. By keeping Tae-pan or Wei-tse-seu point open to the eastward of Tsing-seu Island, bearing N. 55° W.,† the rocks will be avoided, should high tides and smooth water prevent their being seen." Chaw-chat.

"The Island of Woo-seu-shan lies to the westward of Chaw-chat, the channel between them being 5 cables wide. The island is $1\frac{1}{4}$ miles long, and near the centre only a cable's length broad. On the east side is a sandy bay with a fort, having embrasures for eight guns. The N.E. and S.E. faces of the island are steep cliffs: on the west side are three sandy bays with two batteries, each having five embrasures. In Woo-seu-shan Island.

* The Canton, after losing her masts, rudder, and boats in a Ty-foong, July 2nd, 1797, to the eastward of Luconia, in lat. 18° N., lon. 127° E., was drifted round to the northward of the Island Formosa. August 24th, she anchored in 8 fathoms water at the entrance of Amoy Harbour, where she remained till the 31st, but could not get any supplies, nor would the Mandarin forward a letter to Canton with 50 dollars paid down; and what water they procured was brought from the shore in a boat they had built on board.

† About N.W. by W. by the chart.

the northernmost bay of the three is a large village, and the ruins of an ancient fort. On the north point is a large battery, mounting 30 guns, and there are two 4-gun batteries on the N. E. side of the island. On its summit, which is about 300 feet above the sea, are three chimneys, which are intended for alarm signals. Similar buildings exist all along the coast of Fokien and Cheekiang."

Woo-an. " To the westward of Woo-seu-shan half a mile is the Island of Woo-an, which is 5 cables long; it is barren and without inhabitants. Between the two are three small islets, with reefs lying off them. Shelter from easterly winds, with a depth of from 4 to 6 fathoms, might be found here; but vessels had better not pass to the westward of Woo-seu-shan until more soundings have been obtained. The number of detached reefs in this neighbourhood lead me to suspect that more sunken rocks will be found."

Sunken Rocks. " N. 32° W. from Woo-an Island lie two patches, which are covered at high water, and between it and the main are several islets and half-tide rocks. South from Woo-seu-shan Island one mile is another half-tide reef, which lies 7 cables from the main."*

" N. 40° W. from Woo-seu-shan Island is Tsing-seu: mid-way between the two is a cliff islet, Chin-seaô, N.W. of which two cables, and S. S.W. one cable, are reefs, which dry at low water."

Tsing-seu Island. " Tsing-seu Island rises precipitously from the sea, and three forts are built on its summit, which is about 250 feet high. These forts are situated on the east, west, and south faces, having embrasures for 12, 6, and 8 guns; on the N.W. is a jetty, with stone steps leading to the summit; but these, as well as the barracks, were in an unfinished state in August, 1841. The entrance to Amoy harbour lies between this

Cheih-seu. island and a small islet, Cheih-seu (60 feet high), which is 8 cables to the N. E.; the shores of both islands facing the passage are steep to: three rocks lie half a cable southerly from Cheih-seu. Two half-tide rocks lie North 4½ cables, and N. 18° E., 3 cables from it, to avoid which, when standing to the eastward, and within half a mile of Cheih-seu, keep the east end of the island open of the west end of Woo-seu-shan."

" N.E. by E. from Cheih-seu are four islands: the two nearest are rather larger than Cheih-seu, and are called by the Chinese Ta-o-seao and Hwang-kwa."

Seo-tan Island. " Seo-tan Island, about one-third of a mile farther to the north-eastward, is 6 cables long and about 200 feet high, and has a sandy bay upon its northern side. On this island there are three chimneys, and forts upon its northern and southern shore."

Ta-tan Island. "Ta-tan, near Seo-tan to the N.E., is 8 cables long, with a low sandy isthmus in the centre. The east end is the highest (about 300 feet), with a small circular watch-house, and three chimneys on it. On the west side of the isthmus is a village. Between this island and the south end of Amoy, only 12 fathoms were found; soundings, however, were not obtained close in to the Amoy shore."

" From Cheih-seu to the outer harbour the course is N. 38° W. 4½ miles, with a depth of from 7 to 12 fathoms."

" Between Tsing-seu and Tae-Pan point (1½ cables to the southward of which are several half-tide rocks, and a small peaked islet off its north point), is a deep bay, in which are several reefs. Vessels, therefore, should not bear farther to the westward than to bring Tae-pan Point to bear N. 60° W., or Tsing-seu Island S. 60° E., until the positions of the dangers have been correctly ascertained."

Amoy Island. " The south end of Amoy is a sandy point, with several black rocks extending 2 cables from the shore. On the slope of the hill which forms the point is a circular

* This reef does not appear in the chart, but there are several islets off the S.W. point of Woo-seu-shan.

battery, W. by S. one sixth of a mile is a second; between the two, a half-tide rock lies, 3 cables from the shore; to avoid which, when standing in towards the coast, a cliff point, with a battery and three chimneys on it, will be seen, and also a sandy point with a large stone at its southern extreme, three-quarters of a mile farther to the N.W.; tack before these two points come in line with one another."

"From the chimney point mentioned above, the 3 fathoms line extends 2 cables; otherwise the coast line of Amoy, which is a continuous sandy beach, is steep to, and the lead is a good guide."

"N. 61° W., half a mile from the chimney points, is a wall surmounted by a parapet, which extends from the coast inland 3 cables; from hence to the stone on the beach, which is less than half a mile distant, was one continuous line of battery, mounting 48 guns. From the stone on the beach, opposite to which was a white semicircular battery (which, with two other batteries farther to the N.W., appear to have been the only defences until after the visit of H. M. S. Blonde, in 1840), the coast trends rather more to the northward for a quarter of a mile, where there is a creek dry at low water; along this space was a similar line of fortification (stone faced with earth), mounting 38 guns. At the back of the creek is an extensive suburb and an isolated hill, the summit of which is a large mass of granite. At the entrance of the creek was a battery, faced with plank, mounting 5 guns, and upon the opposite side was one similarly constructed, mounting 12 guns."

"N.W. $\frac{1}{2}$ W., three-quarters of a mile from the stone on the beach, are several rocks, which cover at half-tide, the outermost being $1\frac{1}{4}$ cables from the shore. On a point from whence they extend is a mass of granite, the side of which facing the sea has some Chinese characters upon it. To the westward of this was a battery, mounting 7 guns, and on the point forming the other side of the same bay was one, mounting 5. These terminate the defences upon the Amoy side, and here the hills which form the background of the coast line also end: the city, which is very little above the level of the sea, commences at this point."

"The ridge of hills upon the face of the island does not rise above 600 feet; they are abrupt and barren, with numerous large boulders of granite, a square upright mass of which, on the highest part of the western extreme of the ridge, rises to the height of 528 feet above the sea, which is about the average height of the chain."

"From the large stone with the Chinese characters upon it to the western extreme of Amoy, the distance is one mile. The houses extend close down to the beach, and the trading junks lie aground opposite to them."

"The distance across at the entrance of the channel, between Amoy and the island of Koo-long-seu, which is abreast this stone, is 840 yards, and the narrowest part of the channel 675 yards."

"The Island of Koo-long-seu, which lies off the S.W. shore of Amoy, is well adapted for a settlement; it is nearly 3 miles in circumference, and the channel between it and Amoy is 672 yards wide, the ridge of hills on the island being higher than those opposite. There are two distinct ridges upon the island which might be separately defended, the highest point being 280 feet above the sea. The island is principally granite, the soil being formed of it in a decomposed state. Large boulders of it also occur in many places, both upon the shores and the highest parts of the island. Fresh water from wells was plentiful, the artificial channels for conducting it to boats lead me to suppose that there is always a good supply of this article. There are many houses upon the island, and the population may be estimated at between 3,000 and 4,000."

Koo-long-seu Island.

Water.

" Detached rocks lie off nearly all the points, and off the N. E. face, or that towards Amoy, are several, which are covered at high water; therefore, in passing into the inner harbour by this channel, it is recommended to keep the Amoy shore on board, after you have passed the rock with the characters on it. The west extreme of How-seu Island (which is in the centre of the inner harbour, rather more than half a mile off the north point of Koo-long-sew), in a line with a peak on the east part of a ridge of hills at the back of it, will put you on the outer rock. The summit of the island in line with the rock will carry you through nearly in mid-channel. Having passed Harbour Rock, Fan-tseao (which is steep to, and lies not quite a cable from the west point of Amoy, having $1\frac{1}{2}$ fathoms between it and the shore), haul to the northward and bring up where you please, taking care not to approach nearer the Amoy shore than three cables, in order to avoid a reef of rocks lying to the northward of Harbour Rock."

" Off the north point of Koo-long-seu is a peaked rock, covered at high water, $1\frac{1}{2}$ cables from the shore; and N. by W. from it two cables is a shoal patch, having $2\frac{1}{2}$ fathoms at low water, which ought to be buoyed if the harbour is frequented."

" The other entrance to the harbour is between Koo-long-seu and Tae-pan Point, the distance between which is $1\frac{3}{4}$ miles. The coast is steep to, and in the channel the depth varies from 8 to 12 fathoms."

" Having passed the west point of Koo-long-seu, off which are several half-tide rocks one cable from the shore, the channel narrows to 8 cables, and the course for How-seu Island is N. N. E.; this island has 15 fathoms within 30 yards of the rocks, and should be passed close to avoid the $2\frac{1}{2}$ fathoms patch mentioned above. Harbour Rock may be steered for directly; it bears to the southward of East."

N. B.—This channel requires further examination.

" On Koo-long-seu are five batteries: two on the S.E. end, mounting 15 and 9 guns; two on the south side, having 7 and 3 guns; and one on the N.W. side, mounting 8 guns. On Tae-pan point were two batteries, and on the point further to the westward three others, one of 6 and two of 5 guns."

" The S.W. point of Koo-long-seu is in lat. 24° 31′ 7″ N., lon. 118° 3′ 38″ E. High water on full and change, at the moon's transit. Rise and fall by day 12 feet 6 inches, by night 14 feet 10 inches. Variation, 1841, 0° 43′ E."

Tides.

Lee-o-loo Bay.

LEE-O-LOO, or LAE-AO BAY, called also Yow-lo by the Chin-chew people, and Nulo by those of Canton, in lat. 24° 24′ N., lon. 118° 28′ E., is formed on the west side of the eastern extremity of the large island of Quemoy, where the opium traders anchor in from 4 to 7 fathoms. The Sylph's Journal thus describes it: April 22nd, 1833, blowing strong from N.E., at 2 P.M. saw the Island Quemoy and the small islets off its east end; when abreast the largest, about one mile off, had 10 fathoms water. At half-past 2 hauled in for the bay, and at 3 anchored in $5\frac{1}{4}$ fathoms, high water, extremes of the bay from E. $\frac{3}{4}$ S. to W. by S. $\frac{1}{4}$ S., south-west extreme of the land S.W. by W. $\frac{1}{4}$ W., Chapel Island S. S. W. $\frac{1}{2}$ W. 18 miles, Yow-lo village N. E. by E. This bay is spacious, with good shelter from N.W. to East, but otherwise exposed. In sounding found 4 and 5 fathoms water very near the shore, where we anchored, being a bank with only $3\frac{1}{4}$ fathoms on it at low water.

The schooner Greyhound, Captain Josiah Sturgis, of Boston, with opium, May 16th, 1827, anchored here in 4 fathoms, hard sand, with Hea-mun Hill bearing W. by S. $\frac{1}{2}$ S., a village N.W. $\frac{1}{2}$ N. $2\frac{1}{4}$ miles, Yow-lo village N. E. $1\frac{1}{4}$ miles, and the low

rocky point of the bay S. E. $\frac{1}{4}$ S., distant a quarter of a mile, the outer part of which is covered at half-flood, and has 4 fathoms water close to it. About half a mile inside the point there is a small sandy isthmus, over which the sea sometimes breaks into the bay. The depths across the mouth of the bay are from 6 to 8 fathoms, decreasing to $2\frac{1}{2}$ or 2 fathoms inside, near its sandy shore.

HOO-E-TOW BAY, in lat. 24° 30′ N., lon. 118° 29′ E., about $2\frac{1}{4}$ leagues to the northward of the last-mentioned bay, and to the N. Eastward of Quemoy Island, was visited May 23rd, 1827, by Captain Sturgis, in the Greyhound schooner; this bay appears to afford shelter from N. E. and easterly winds. Quemoy and its adjacent isles form the West and S.W. boundary of this bay, and it is formed on the east side by a peninsula, terminating in a point with breakers, and a low tower near the point. The Greyhound anchored in 7 fathoms, about $1\frac{1}{2}$ miles from the eastern shore, and nearly at an equal distance about S. $\frac{1}{2}$ W. from Oyster Island, which lies at the N. E. part of the bay, and half a mile in the same direction from a sunken rock, covered with 2 feet at low tide, having close to it 3 fathoms water; near to its western side there are 6 and 7 fathoms, decreasing regularly to 3 fathoms close to Oyster Island. From the Greyhound's anchorage, Low Tower or Pagoda, on eastern point of the bay, bore S. 63° E.; Oyster Island N. 5° E. $1\frac{1}{4}$ miles; western point of the bay S. 40° W.; highest hill on western coast W. S.W.; another distant hill N. 52° W.; Low Island N. 72° W.; island off western point of bay S. 30° W.; Sunken Rock N. 5° E., distant half a mile, and a pagoda on a distant hill N. 40° E. There are large and dangerous fishing stakes fronting the eastern shore of the bay to a considerable distance, barely above water, having 7 or 8 fathoms of depth among them; to avoid these, do not approach that shore nearer than $1\frac{1}{2}$ miles. From the Greyhound's anchorage junks' masts were visible abreast, over the peninsula, a little to the South of a walled town, and a large town lies at the N. E. curve of the bay, with villages between it and the walled town mentioned. From the anchorage the Greyhound steered S. S.W. in proceeding to sea, in regular soundings of 8 to 10 and 11 fathoms, abreast the islets and breakers near the S.W. extremity of the bay. Hoo-e-tow Bay.

EAST COAST OF CHINA, FROM AMOY TO THE SHAN-TUNG PROMONTORY.

TOE-KOW, in about lat. 24° 48′ N., distant about 11 or 12 leagues N. E. of the entrance of Amoy Harbour, is an open bay, exposed to N. E. and Easterly winds; the anchorage is within a mile of a reef of rocks bearing to the S. Westward, and a shoal bears from it S. by E. There is sometimes a demand for opium at this place, but there is difficulty in procuring the dollars for it, and the danger is great, if a gale come from eastward whilst a ship remains at anchor in the road; there being no room to work out to sea, she must trust to her ground tackle. About 3 miles to the N. E. of this place there is another small bay full of rocks and foul ground. Toe-kow.

Chin-chew Bay.

CHIN-CHEW BAY, about 3 or 4 leagues N. Eastward of Toe-kow, is large, and sheltered from northerly and southerly winds by the projecting points of land on each side. Captain Rees, in 1835, made Sonchee Point (the S.W. point of the bay) to be in lat. 24° 47½′ N., lon. 118° 43½′ E., and Ta-tuy, the largest island off the bay, in lat. 24° 52′ N., and on the same meridian as the point. From the outermost point, which forms the western side of the bay, a reef and sand-bank stretches to a considerable distance, which should have a good berth in rounding the point, and there is said to be several reefs and islets in the bay. Chin-chew harbour and town are situated at the bottom of the bay, on the western side; the harbour is covered from the bay by a point of land, having on it a large square pagoda: on the other side of the point may be seen the numerous masts of the junks which are moored in the harbour.

The coast from Chin-chew Bay extends to the eastward to the Lam-yet Islands, and there are several bays and harbours on this part of the coast in the neighbourhood of Chin-chew Bay, formed by reefs and islets, which render the ingress and egress intricate, as some of the sharp rocks are covered at half-tide, and require great caution in passing among them, the rise and fall of tide being upwards of 3 fathoms on the springs. By the Sylph's Journal, in April, 1833, one of these bays appears to be 3 or 4 leagues to the eastward of Chin-chew, and in lat. 24° 53′ N., by an indifferent observation: she anchored April 8th, opposite the large walled town of Tsong-boo, where many junks were loading sugar for the northern ports. From her anchorage at Tsong-boo, the Sylph weighed and ran into another bay a little to the westward, which was thought at first to be that of Chin-chew; but having no observation, this became doubtful, although several of the localities are specified in the journal, which describes the bay as follows:—"This bay has several islands, reefs, and rocks in it: we anchored in 5¼ fathoms at high water, with a pagoda on a point of land on the western side of the bay, the masts of the junks visible over the low land, where Ti-tho or Jit-ho town is situated, and bore W. by S. ½ S., distant 3 miles; centre of Toa-tuy Island S. by W. ½ W. three-quarters of a mile; A-aa town N.W. 1 mile; Ta-kut town on the east point of the bay E. N. E. 4 miles; easternmost point or extreme of the bay E. by N. ½ N. 4½ miles, and the islets and rocks off this point East. On the 13th and 14th April, the wind blew strong from E. N. Eastward, forcing a heavy swell into the bay, which made the ship roll deeply. On the 20th, moved for a day to the west point of the bay, and anchored in 6 fathoms water, Ti-tho Pagoda N.W. by W. ½ W.; west point of the bay S. ¾ W.; rocks off that point S. ½ E.; Ta-kut town S. by E.; Toa-tuy Island near our first anchorage N. by W.; off shore about three-quarters of a mile."*

Tides.

Hwuy-gan-heen.

HWUY-GAN-HEEN HARBOUR, in about lat. 25° 6′ N., lon. 119° 6′ E., and about 5 or 5½ leagues to the North-eastward of Tsong-boo, is thus described in the Sylph's journal:—"April 6th, 1833, passed an island, supposed to be Ock-seu, the southernmost Lam-yet, hauled in W. by N. for a bay, said by the pilot to be adapted for smugglers. At 11 A.M. rounded an island with a long reef off it, at the entrance of a deep bay, into which we worked with a contrary wind, passing several patches of dangerous rocks, on one of which we nearly ran before it was seen. Working in till 1 P.M., then saw some large junks at anchor in an inner harbour, formed by islands;

* The Sylph remained in this bay from the 9th till the 22nd April, and sold a considerable quantity of opium; on this day, the wind blowing strong from N. E. right on the shore, with rain and threatening weather, she weighed anchor at 9 A.M., stood out till 10 A.M., and being then clear out of it, she bore away S.W. for Lee-o-loo Bay.

stood in for them, found the entrance formed by two islands; had one cast of $3\frac{1}{2}$ fathoms, then 15, 16, and 17 fathoms: off the easternmost island are several rocks covered at high water, requiring care in passing. Anchored in 12 fathoms, a village with a large pagoda N. E., distant half a mile; entrance of the harbour S. E. by S. 1 mile; island from N.W. by N to S. E. by E. $\frac{1}{2}$ E.; islet off the east end of the latter S. E. with some detached rocks. This would be an excellent harbour were it not for numerous small rocks, reefs, and fishing stakes, scattered about. There are many large villages in the vicinity and on the adjacent islands; the main land is high, and about 4 miles distant. The tides set fair into and out of the harbour, running with rapidity, and the perpendicular rise and fall appeared to be about 24 feet. Tides.

In entering or departing from this harbour, keep near the southern or western side of the channel, the water being deep close to the rocks; but on the northern or eastern side there are many rocks, and an extensive bank dry at low water, this being the spot where in entering the harbour we had $3\frac{1}{2}$ fathoms at high water. The Sylph left this harbour April 8th, steered out of the bay in a S. S.W. direction, and saw many rocks and shoals, which were not visible when she entered. The best guide is to keep a boat ahead, for the lead is of little use, the rocks being perpendicular.

THE LAM-YET ISLANDS, with other groups, form a great chain of islands stretching along the coast to the N. Eastward; many of them are only rugged rocks. There are safe channels betwixt some of these groups of islands, and places of shelter inside several of them. Ock-seu, the southernmost island of the Lam-yet range, is placed in lat. 24° $59\frac{1}{4}'$ N., lon. 119° $34\frac{1}{2}'$ E. by the chronometers in the ships of the embassy under Lord Amherst; they passed between it and the main, and had not less than 13 fathoms water: these islands appeared very barren and of a red colour. The outer or easternmost of the Lam-yet Islands is in lat. 25° 12′ N., lon. 119° 50′ E. Lam-yet Islands.

HING-HWA-FOO PAGODA, in lat. 25° 25′ N., lon. 119° 50′ E., is built on the south point of a little circular bay, said to form a good harbour, although probably too shoal for large ships: it lies to the S.W. of Hae-tan Island, and directly inside the island named the Three Chimneys. Hing-hwa-foo Pagoda.

HAE-TAN, or SEA ALTAR ISLAND, is the largest island on this part of the coast, extending several leagues in a N. N. E. and S. S.W. direction, in form of a crescent, embracing a large but shoal bay on its western side fronting the main land, and where the principal town is situated. The body of the island is in about lat. 25° 36′ N., lon. 120° 0′ E.; the passage inside of it is very intricate, and the connecting chain of the Lamyet and other isles, with their numerous rocks, islets, and unknown dangers, together with the strong tides, render it particularly unsafe for large ships. Several small ships have proceeded through this inside passage, one of which was the Dhaulle, in 1827, and the Amherst, in 1832; they found the soundings usually from 10 to 15 fathoms inside the Lam-yet chain, and from 5 to 8 fathoms within Hae-tan. Hae-tan.

THE MIN RIVER (the entrance in lat. 26° 11′* N., lon. 120° 0′ E.) leads to the celebrated city of Fuh-chow-foo, or Fou-chow, which is about 10 leagues West from Min River.

* Some late observations place it 6 or 7 miles farther South.

the entrance, and is a place of great trade. This river was formerly called Chang by the Dutch, and is fronted by a chain of isles about 4½ or 5 leagues from the entrance, extending nearly North and South, having safe passages between some of them; the southernmost of these is a small group, called Pih-keuen-shan, or White Dog Islands, in lat. 26° 4′ N., lon. 120° 14′ E. A large island, of 5 or 6 miles in extent each way, lies in the entrance of the river, near the N. E. side of which is the little Island of Hoo-keang, with its two contiguous islets. The proper channel into the river is to the northward of all these; the channel to the southward of the large island appears to be unexplored. The entrance of the river lies in a W. N.W. direction from the White Dog Islands, and is formed by sand-banks on each side, partly dry at low water; these project 6 or 7 miles from the land; about a mile further out, there is a patch of rocks covered at high tide. The fair passage is to the South of this patch, and when it bears North, about half a mile distant, a W.N.W. course leads directly between the sands into the channel, which is from half to three-quarters of a mile wide, with soundings of 3 to 6 or 7 fathoms. On the south sand-bank there is a rock above water; this is a guide for entering the channel, by keeping it bearing W. 18° N. when first seen, and drawing it more to the westward when it is approached within 2 miles, to avoid the edge of the south sand. After passing to the northward of the rock about half a mile distant, Hoo-keang Island will be seen bearing about W. by N. ½ N., with two islets close to its northern side, which islets kept in one, or on a transit line, after having passed the rock, is a guide for the channel into the river, and when these islets are approached, Woo-ga Point, with a fort on it, lies opposite on the north side; it has deep water close to, with good anchorage about a mile to the westward of it, near the Temple on the northern shore of the river, in from 3 to 6 fathoms. About half a mile to the westward of the Temple is the entrance to a branch of the river leading to the northward, and a mile still further West the main channel narrows to the width of about a quarter of a mile, forming, between the north point of the large island and the main, the Woo-soo-mun Pass. The Pass has a fort on each side, and there are several islets and rocky patches near it to the eastward. The soundings in this part of the river are very irregular. The river from the Pass takes a south-westerly direction for six miles towards the west end of the large island, where the northern and southern entrance channels unite; the river proceeds in a general westerly direction for 18 or 20 miles to the city of Tuh-chow-foo.

Pih-keuen-shan. Directions.

Ting-hae.

TING-HAE, in about lat. 26° 20′* N., lon. 120° 5′ E., affords good shelter, into which the Canton was piloted by a fisherman, August 7th, 1797, and anchored in 7¾ fathoms, blue mud, opposite the town, and entirely surrounded by land. She procured 40 butts of water and a few bullocks; sailed from hence August 18th, and arrived 7th September at Macao. After weighing from Ting-hae, steered between E. S. E. and South in passing out amongst the islands which front the bay, soundings regular from 7 to 16 fathoms, soft ground.

About 3 or 4 leagues South from Ting-hae Point and town, and about 2 leagues from Mey-hou-so Point, there is a rocky bank, sometimes dry, which forms the southern extreme of the Bay of Ting-hae or Min River. The depths in the channel, between the rocky bank and shoals which front Min River and the islands outside, are from 9 to 14 fathoms, and from 7 to 11 fathoms between the above-named point

* It was placed in lat. 26° 10′ N., lon. 119° 57′ E., by Captain Vivian, of the Canton; the exact latitude, therefore, is not known.

and Pih-keuen-shan group, lying abreast the point. Between this group and the next islands to the northward the passage is wide and safe, having a peaked rocky islet bounding it on the north side. This may be considered the best channel to pass through amongst the islands into the bay, and it is about 4 leagues to the eastward of the point.

NORTH-EASTERLY WINDS usually prevail on this part of the coast, during nine months of the year, or from September to June; when these winds blow strong, which often happens, the weather becomes very thick with rain, rendering the navigation unpleasant and hazardous. These north-easterly winds sometimes set in very early; for the Eaton, bound to Chusan, when off Amoy, 4th August, 1699, got N. E. winds, and with much labour was six or seven weeks getting from thence to Chusan: the Limpo, at this time bound to the same port, was forced to cut away her main and mizen masts, and bear away from Macao; and Captain Hosier, in August and September, 1700, could not make his passage to Chusan. Winds and weather.

Fast-sailing vessels, nevertheless, can now effect a passage to the northward, even against the North-east Monsoon; for the Sylph left Macao, October 20th, 1832, touched at several places on her passage along the eastern coast of China, reached Shan-tung in a month from Macao, and anchored off Kae-chow-foo on the 28th November, in lat. 40° 30′ N.

Small ships ought to be prepared against an attack from the Chin-chew Ladrones, who have been numerous here, and at times, on other parts of the coast; some of their junks have 6 or 8 guns, and from 100 to 200 men. Ladrones.

The ship Ann, Captain John Churchman, from Timor Island, bound to Canton River, with a cargo of sandal-wood and wax, was boarded by the Chinese Ladrones near the Lema Islands, in 1808: they killed the captain, officers, and all the crew, except five or six Lascars: of these, three reached Canton in February, 1810, and related the circumstance.

From Ting-hae the coast extends, as before, in a north-easterly direction, having an almost continuous chain of islands fronting it, with rocks or rocky islets in several places. The Dhaulle schooner, Captain Blaxland, in June, 1827, passed to the northward along the coast inside the greater part of the islands, and touched at some of the following places.

SEAON-MUN, Little Gate, or Pass, in lat. 26° 32′ N., lon. 120° 25′ E., is a small passage formed between the peninsula of Sam-sah and the contiguous islands to the southward, called the Sam-sah Islands; the harbour on the N.W. side of the peninsula, where the Dhaulle anchored, seems to be sheltered by the latter from southerly and easterly winds, and from northerly winds by the adjacent islands. Sam-sah is a walled town on the main land to the westward of the harbour. Mr. M'Donald, master of H.M.S. Melville, gives a sketch of the N. E. part of the Samsah Islands when bearing N. 30° W., representing it as a bold rocky headland, with a high detached rock off it, seen from this bearing as just separated from the perpendicular cliff of the point. Seaon-mun. Sam-sah.

HOK-LING-SHAN PAGODA, in lat. 26° 51′ N., lon. 120° 23′ E., stands on the north-west side of the bay, where the Dhaulle anchored near the south point. Hok-ling-shan Pagoda.

LE-SHAN, a group of the largest islands on this part of the coast, has an intricate Le-shan Islands.

channel between them and the main land, through which the Dhaulle navigated. The body of the group is in lat. 27° 3′ N., lon. 120° 48′ E., and there is anchorage inside of the islands at Tung-ho-mun, in lat. 26° 57′ N.

Pih-kwan, and other places.

PIH-KWAN, or White Mandarin Harbour, in lat. 27° 14′ N., lon. 120° 46′ E., is very little known, but said to be a spacious harbour, with shelter from all winds, by changing the berth of anchorage, and is placed, by a late navigator who visited it, in lat. 27° 11′ N., lon. 120° 22′ E.

To the N.E. of Pih-kwan lie the Ping-fung-shan Islands, in lat. 27° 22′ N., lon. 121° 5′ E., and about 5½ leagues North of the latter, in lat. 27° 38′ N., lon. 121° 3′ E., lies Ta-pe-pa-shan, or Great Musical Instrument Island, with Seao Pe-pa-shan, or Little Musical Instrument Island, between them.

SAN-PAN-SHAN, or Three Boat Island, in lat. 28° 0′ N., lon. 121° 28′ E., is the outermost of several islands nearly fronting the inlet of the sea which leads to Wan-chow-foo River and city, distant about 8 or 9 leagues to the westward. About 4 or 4½ leagues more northward lies Tehow-mun-shan, in lat. 28° 12′ N., lon. 121° 31′ E., a small island contiguous to the south point of the peninsula of the Bay of Tae-ping-heen; and Song-mun-shan, in lat. 28° 22′ N., lon. 121° 38′ E., lies near the eastern part of that peninsula.

Tae-chow-foo River.

TAE-CHOW-FOO RIVER has several islands adjacent to the entrance, which is in about lat. 28° 42′ N., lon. 121° 26′ E., and the city is about 8 or 8½ leagues up the river to the W. N.Westward.

Hih-shan Islands.

THE HIH-SHAN, or HEY-SAN (Black) ISLANDS, in lat. 28° 52′ N., lon. 121° 44′ E., or, according to some recent navigators, in lon. 122° 10′ E., form a group of considerable extent, having soundings of 22 fathoms near them on the outside, and a safe passage inside, with soundings of 9 to 14 fathoms, as found by the Sylph, April 3rd, 1833, when the Hih-shan group bore from N. ½ E. to E. ½ N., Chik-hok, a remarkable high island, W. by N., distant one mile, and the southernmost island in sight S. by W. The tides run strong along the coast within these islands, the flood from southward and the ebb from the northward.

Shei-poo.

SHEI-POO, in about lat. 29° 15′* N., lon. 121° 40′ E., situated at the head of a beautiful basin, would be an excellent harbour, were it not for its narrow entrance; the rocks and isles outside, however, give tolerable shelter in an outer road. The Sylph anchored here April 1st, 1833, and her journal furnishes the following information.

"At day-light April 1st, sailed from the anchorage at the Buffalo's Nose, Quesan Islands, and at 11 A.M. anchored in 4½ fathoms water in Shei-poo Road, islands to the southward bearing from E. by S. to S.S.E.; southern entrance to the road S. by E.; fort on the hill (the larger of two) W. S. W.; Ban-ga-boe Rock, in the entrance of the road, E. by N.; Ban-ga-oa Island, in the road, N.E.; Keik-shuy-moon, the entrance into the inner harbour, W. by N.; Kin-pai-moon, the northern entrance into the anchorage, N. N. E. This place bears from the Buffalo's Nose S. by W., distant about 10 or 12 leagues. We sailed along the main land inside the islands, carrying from

* Another account states it to be in lat. 29° 2′ N., which *perhaps* may be nearest to the truth.

7 to $3\frac{1}{2}$ fathoms; when Patahe-cock bore N. 66° E., distant 18 miles, the depth increased to 4 and $4\frac{1}{2}$ fathoms, continuing until off the entrance of the road, which is easily known by the ruins of a wall and two conspicuous forts; it bears from the above-named island about W. S.W. $\frac{1}{2}$ S. $8\frac{1}{2}$ or 9 leagues. The entrance of the inner harbour is not above 100 yards wide, but it is deep, with rapid tides rushing in and out; it is several miles in extent inside, completely land-locked, of beautiful aspect, and generally contains many junks and innumerable fishing boats.

THE CHUSAN ARCHIPELAGO, including the Quesan group, is that large assemblage of islands, of which Chusan is the principal, lying near the main land, between the parallels of 29° 20′ and 31° 0′ N.: that portion of it to the northward of Chusan, that is, to the northward of 30° 10′ N., is, however, unexplored, and may be said to be as yet almost unknown. The following directions are given by Captain R. Collinson, R.N., who surveyed these islands while employed as surveying officer to the fleet in 1840-41. *Chusan Archipelago.*

"THE QUESAN, or more properly the KEWSHAN GROUP, consists of eleven islands, besides several rocks, the largest of which is 3 miles long, its greatest breadth is $1\frac{1}{4}$ miles; in two places, however, it is not more than a cable and a cable and half across. The other islands are much smaller, varying from three-quarters to one quarter of a mile in extent. They are thickly populated, probably to the amount of 1,500, who principally obtain their subsistence by fishing. They have a considerable number of goats, pigs, and fowls, and the sweet potatoe is cultivated on almost all the islands, and during the winter forms the principal article of food." *Quesan Islands.*

"The south-easternmost island is called Pata-he-cock or Pa-tsze-keo; its flat and table appearance will at once distinguish it from the neighbouring islands (the Hih-shan group) which lie to the southward. Four small islets lie off its N. E. shore and one off its south shore. The summit is about 450 feet above the level of the sea, and is in lat. 29° 22′ N., lon. 122° 14′ E." *Pata-he-cock Island.*

"The north-easternmost island of the group is a narrow cliff islet, uninhabited. To the westward are four small islets, inhabited and cultivated; and North of them, 3 cables, is a flat precipitous rock, the coloured appearance of which renders it remarkable, being composed of porphyritic hornstone. The face of the islands may be approached without danger, the depth being 7 or 8 fathoms near the shore." *N. E. Island.*

"The north-westernmost island is the second in size of the group, and attains an elevation of 400 feet above the sea. Its northern extreme is remarkable, in consequence of several isolated masses of rock." *N. W. Island.*

"The body of the large island lies due South of the north-western island; between the two is a mud bank gradually shoaling to the shore of the large island. By keeping the west extreme of the north-western island to the eastward of N.N.E. not less than 3 fathoms will be found, and good holding ground without much swell. The highest part of the large island forms a sharp peak near its western extreme, and is 490 feet high. The coast of the island is steep high cliffs, with the exception of six small sandy bays, and is steep to on all sides except the north-western."

"South from the large island, and separated by a channel $1\frac{1}{2}$ cables wide, there is another island, which is also high, with steep cliffs. Off its western point there is a half-tide rock, and a reef also runs off from its S. E. extreme." *S. W. Island.*

"The Holderness Rock lies W. by N. one mile from the highest part of this island; it has one fathom over it at low water, and breaks occasionally. From it the highest part of the north-western island bears N.N.E. $\frac{1}{4}$ E. A small peaked islet to the south- *Holderness Rock.*

eastward S. E. ½ E., and the Table Hill of Pata-he-cock S. E. by E. ¼ E., the reef of rocks off the S. E. extreme of the island being in a line with it."

Sunken Rock. "Another sunken rock, with only three-quarters of a fathom on it, lies S. S. W. three-quarters of a mile from the summit of the island South of the Large Quesan, and W. by N. ¾ N. from Pata-he-cock; the eastern extreme of the large island being in a line with the eastern extreme of the nearest island bearing N. E. ½ E."

Inhabitants. "The inhabitants were civil, and sold their pigs, potatoes, and goats readily. Fresh water (I should think) could not be procured in any quantity. During the expedition Pirates. against Chusan in 1840, H. M. S. Pylades encountered three pirate junks, one of which was captured and burnt. The inhabitants did not appear to participate at all in the crimes of these marauders, and expressed themselves well pleased on their being driven away."

Cape Montague. "Several small islets lie off CAPE MONTAGUE; with a depth of water close to them of 4½ or 5 fathoms. The cape is in lat. 29° 10′ N., lon. 122° 5′ E. There is a passage between it and the main, which is used by the opium vessels and junks. Betwixt it and Buffalo's Nose many deep inlets occur, which render the extremity of the continent doubtful."

Half-tide Rock. "There is a Half-Tide Rock S.W. by S. from Pata-he-cock 7 or 8 miles, being in a straight line between it and Cape Montague, and S. E. ¼ S. 11 miles from the Bear, or Ta-muh-yang (an island with a sharp peak at its eastern extreme.) It is uncovered two-thirds of the tide High tides and smooth water sometimes preven tits being seen."

Tides. "The time of high water is 2h. 30m. before the moon's transit, and the rise 14 feet. The change in the direction of the stream does not take place until two hours after the change in depth. The flood tide comes from the southward, and seldom exceeds two Variation. knots per hour. Variation of the compass 1° 57′ W. in 1840."

"Between the Quesan group and the Bear, the depth of water varies from 3½ to 6 fathoms, gradually shoaling towards the latter. Two small groups of islets lie between Cape Montague and the Bear; they are 5 miles from the main."

"From the N. E. extreme of the Quesan Islands, Buffalo's Nose bears N. W. by W. 16 miles; a small rock (the Mouse), nearly level with the water at high tide, N. N. W. Whelps. Starboard Jack. 6 miles; the WHELPS, a group of four small islands, W. by N. ½ N. 10 miles; STARBOARD JACK, a low, flat reef, with 2 rocks off its eastern end, N.W. 10 miles."

"Between the Whelps and the Buffalo's Nose are several isolated patches of Corkers. rock, called the CORKERS; the distance between which and Starboard Jack is 3½ miles, with a depth from 5 to 6 fathoms. The outer rock of the Corkers is occasionally covered, and bears from the extreme of Buffalo's Nose S. S. E. ¾ E. Two islets, a cable's length farther to the westward, are always above water, and will give warning should the sea not break on the outer rock."

Tinker. "N.N.E., 1¾ miles from Starboard Jack, is the TINKER, a steep cliff rock, 80 feet above the water. The passage between them has 6½ fathoms water, and will be found an eligible passage during the North-west Monsoon, as vessels will be further to windward than in the usual track, and have better anchorage under Lowang than under Buffalo's Nose. A sunken rock lies S. E. by E. from the Tinker (nearly in a line with the Mouse) 2 cables distant."

Buffalo's Nose. "The Island of BUFFALO'S NOSE is 1¼ miles from North to South, and three-quarters of a mile from East to West. Its eastern shore is rocky, and off its western extreme lies a small islet. The western shore has several steep inlets, one of which nearly separates the island into two parts. There are three peaks on the island, the central one of which is 500 feet high; and near the northern extreme the island is perforated, whence, I suppose, its name. The anchorage between this island and the Ploughman

is secure. During the North-west Monsoon, however, the wind blows directly through, and occasional violent squalls are experienced. Fresh provisions and water may be obtained here, but the supply of the latter is not always certain. On the main, 2 miles distant, are several villages, the inhabitants of which endeavoured to intimidate us from landing."

"The largest island of the PLOUGHMAN GROUP lies W.N.W. nearly one mile from Buffalo's Nose, the depth of water between the two varying from 5 to 18 fathoms. It is an even, flat-topped island, with a reef extending from its N.E. extreme. Another reef lies N.W. by N. 4 cables from the same point. The other two islands are small, and lie to the N.W. of the larger one. The junks usually pass inside the Ploughman and the Buffalo, and to the westward of the Corkers. The passage is not recommended for square-rigged vessels, as there are many reefs and the tides are strong." Ploughman Islands.

"The islands of MESAN and LANJETT lie three-quarters of a mile to the N.E. of the Tinker; there is deep water in the passage between them, but sunken rocks lie off both shores. There are four larger and several smaller islets; the largest is not a mile in extent, and is about 400 feet high; its barren summit forms one of the most remarkable features in the Buffalo's Nose passage." Mesan and Lanjett Islands.

"Between this group and Front Island, which lies 3 miles to the N.E., is the entrance of a harbour convenient in the North-west Monsoon. A small castellated rock lies near the centre of the harbour, and the depth of water varies from 5 to 9 fathoms." Harbour Rouse.

"The south face of LOWANG (the largest of the islands in the southern part of the archipelago) has two deep indentations with sandy bays, and a reef extends from the point opposite Mesan and Lanjett 3 cables. The reefs also extend from the northern extreme of the Mesan and Lanjett group 5 cables, narrowing the passage to less than a mile. From the small castellated rock before mentioned, a N.W. by W. $\frac{3}{4}$ W. course will carry you to Tree-a-top (a small island *now* without a tree on it), at the entrance of Gough and Duffield Passage, and keep a mid-channel course between the reefs. The coast line of Lowang immediately after the reef point trends to the northward, forming a deep bay that extends to the entrance of Duffield Passage. South one mile from the first island in the bay there is a mud-bank, with $3\frac{1}{4}$ fathoms, to avoid which the island may be kept on board, keeping clear of a rock which lies half a cable from its south extreme." South side of Lowang.

"From this island to DUFFIELD REEF (a group of rocks lying off the western side of the entrance to Duffield Passage, with a sunken rock between them and Lowang) there are from 5 to 9 fathoms, good holding ground." Duffield Reef.

"From the anchorage off Buffalo's Nose, TREE-A-TOP ISLAND bears N. $\frac{1}{2}$ W. $5\frac{3}{4}$ miles; it is about 4 cables in circumference, and 180 feet high. There is a pile of stones on its summit, but no tree." Tree-a-top Island.

"DUFFIELD PASSAGE—that is, the passage between the islands of Lowang and Foo-too-shan—is the nearest towards Keto Point. When between Duffield Reef and Tree-a-top Island, the water suddenly deepens from $5\frac{1}{2}$ to 40 fathoms; the course through is N.N.E. $3\frac{3}{4}$ miles. It is $1\frac{1}{4}$ miles broad at the entrance, and 5 cables at the narrowest part. On the Foo-too-shan shore are several islets, and off the fourth point in the Lowang shore is a reef one cable from the shore. The NOTCHES, two small islands, lie immediately opposite to the reef; the Lowang shore, otherwise, is very steep to, 35 fathoms within a cable's length of the mud. On the Foo-too-shan side, among the islets, the water shoals to $4\frac{1}{2}$ and 5 fathoms, where a ship may stop a tide, if necessary." Duffield Passage. The Notches.

"Between the Notches and Foo-too-shan there is a half-tide rock; unless it shews, vessels should not tack inside the Notches so as to pass to the westward of them." Half-tide rock.

Bird Rock. "The BIRD ROCK lies near the north end of the passage, and has a stone pillar upon it; it is one cable from the shore. The distance from hence to Roundabout Island is 9 miles N. N. E. $\frac{1}{4}$ E.*"

Gough Passage. "GOUGH PASSAGE, by far the best of any leading to Chusan, is formed by Foo-too-shan on the East, and the central islands, four in number, on the West. In the passage both shores are steep to, but off the southern islet of the central group is a shoal, of which the lead will give warning. The passage is $1\frac{1}{2}$ miles through, and 5 cables wide."

Robert Passage. "ROBERT PASSAGE is formed by the central islands and the mud extending from Shang-Meishan on the West, which dries one mile from the solid ground. The boundary of the passage westerly, therefore, is not known, except at low water, the lead giving no warning; the depth of water varies from 6 to 40 fathoms. The channel is $1\frac{3}{4}$ miles through, and 5 cables wide. The course, after you are through these two passages, for Keto Point, will be N.E. $\frac{1}{4}$ N. $9\frac{1}{2}$ miles."

"Anchorage will be found anywhere along the Keto shore, until you are past Sing-lo-shan Island. As there is no anchorage beyond this, until you get to Elephant Island, ships are advised not to proceed unless they have sufficient wind and tide to carry them in."

Tides. "In these passages the first of the flood often comes from the northward, and runs sometimes for three hours before it takes the direction of the ocean tide."

Junk Passage. "Between Shang Meishan and the Keto shore there is a narrow passage, $2\frac{1}{2}$ cables wide. It has 5, 6, and 7 fathoms, until you arrive at the southern extreme, where it shoals considerably; not more than 10 feet were obtained: some part of the channel, however, may be deeper, as only one line of soundings was obtained across the entrance of the channel. Near the centre of the passage on the Keto shore there was a custom-house, and the entrance to a canal, which communicated with two populous villages. Two miles to the northward of the entrance to this passage is the walled town of Ko-keu-so, apparently a military station, from the interruption they gave to our surveying operations in 1840."

"The islands which form the several passages may be here briefly described."

Lowang Island. "LOWANG or Luh-wang, is $9\frac{1}{2}$ miles long and 6 miles broad at the western extreme; near the centre of the island it is a little more than 2 miles across, and in some parts very little elevated above the sea. The south-eastern body of the island rises to a height of 865 feet, being a conical bare hill. On the isthmus is an isolated peak. On the N.W. side of the island are five peaks, the highest of which is 920 feet above mean tide level. The south-western coast has been already described; that to the West in Duffield Passage has several small bays, with stone embankments stretching from point to point, by which means a considerable quantity of land has been gained from the sea. The points of these bays form nearly a straight line; beyond the Bird Rock, the coast line trends to the N. E. Cape Lowang, the northern extreme of the island, is high and bold. The island is 26 miles in circumference, and is very populous."

Foo-too-shan. "FOO-TOO-SHAN is not quite 3 miles long and one mile broad. The south extreme forms a narrow point, and is connected at low water with St. Andrew Island. The channel between the south point and Tree-a-top is $3\frac{1}{2}$ cables wide, and has deep water. A spit runs off the northern extreme of Foo-too-shan, to the northward of which are three small islands."

Central Isles. "The south-westernmost of the Central Isles is a small islet, which is connected at low water with the next island by a spit and a reef. This is the largest of the group,

* N. E. by N. by the chart.

being a quarter of a mile long. It is the resort of several fishermen, whose stakes and nets in 7 fathoms water will be seen to the southward."

"SHANG-MEI-SHAN appears formerly to have been eight islands, now however united by substantial stone walls, one of which is $1\frac{1}{2}$ miles in extent. The mud rises $1\frac{1}{2}$ miles from its southern extreme, and $2\frac{1}{2}$ cables from the northern. Off the N. E. side are two small islands, from the northernmost of which the 3 fathoms line extends 4 cables northerly. By keeping the central island open of the two islands mentioned above, until you are past them half a mile, the shoal will be avoided, and the Keto shore will be approached." Shang-mei-shan.

"The next passage to Buffalo's Nose is called TAOU-SOW-MOON by the Chinese. The entrance to it is N. $\frac{3}{4}$ E. 18 miles from the north extreme of Quesan Islands. The island called Beak Head forms its S.W. extreme, off the east end of which lie three small islets, and two hummocks near the end of the island render it sufficiently remarkable. Between the Beak and Front Island are three islets and a rock, which with Lowang form Harbour Rouse. There is a narrow passage between Lowang and the Beak Head, having $3\frac{1}{2}$ fathoms, but there would be no object in using it while there are other passages so much superior. The Beak Head is 5 miles long, and $1\frac{1}{4}$ miles from its eastern extreme is very narrow. Two reefs lie close in shore upon its N. E. side. The distance across to Vernon Island or Kea-ke is $2\frac{3}{4}$ miles, with 18 or 20 fathoms water. Near the western extreme of the Beak the channel narrows to 5 cables, and there is no bottom with 34 fathoms. The channel is bounded by a reef of rocks, the northernmost of which is always above water, on the South; and an island, with a conical hill and two islets on its south side, on the North. This island is situated mid-way between Vernon Island and the Beak Head. Between it and the former are two small islets and a reef, which render the channel on that side more intricate." Taou-sow-moon. Beak Head Island.

"Having steered N.W. by W. $\frac{1}{4}$ W. $8\frac{1}{2}$ miles from the entrance, you will pass another island, to the N.W. of which good anchorage will be found in 9 and 10 fathoms. The same course 4 miles farther will carry you clear of the passage. On the north side of the channel are 4 small islets, and between them and Taou-hwa-shan is an archipelago of reefs and islands. There is a passage through into Hea-ke-moon, but it should not be attempted without local experience."

"On the Lowang side is a reef, and an islet with a small pinnacle on it. The reef bears S. E. by S. from Cape Lowang, and is generally uncovered. The mud dries 7 cables off Lowang in the bight; vessels therefore beating through should not stand in towards this shore, so as to bring Cape Lowang to the northward of the bearing given above to avoid the reef: on this side of Lowang it will be found difficult to land except at high water." Reef.

"The SOUTH-EAST passage, or HEA-KE-MOON, lies 5 miles farther to the northward. It is formed by Vernon Island on the South, and Taou-hwa-shan on the North." Hea-ke-moon.

"The east end of VERNON ISLAND is rugged, with large boulders of granite. There is a cove at this end of the island, which runs in three-quarters of a mile, and would afford good shelter to boats. The island is 5 miles long; on the N.E. side is a long bay, with two islets and a reef in it, where vessels may anchor in 4 or 5 fathoms, and procure water from the opposite island of Taou-hwa-shan. There are several cascades, and the water might be obtained without removing the casks from the boats. The passage at the entrance is $1\frac{1}{2}$ miles broad: 6 miles within, it narrows to $3\frac{1}{2}$ cables. Two small islands and some rocks on the Taou-hwa-shan side, and an island which has a sharp peak, and a sunken rock half a cable from its north extreme, form the bounda- Vernon Island.

Taou-hwa-shan.

ries. The Taou-hwa-shan shore, except in the vicinity of these islets, is steep to, and the hills bold and precipitous. The peak rises to the height of 1,680 feet; near the western end, the island becomes low; rising, however, again towards the extreme, where it is surmounted by a huge pinnacle, which will be recognized nearly throughout the S. E. part of the archipelago."

"The depth of water in the channel is 60 fathoms in some parts, and the tides are strong. It will, however, be found a convenient passage to sea from Chusan during the North-west Monsoon, the distance from Elephant Island to the open sea being only 17 miles by this passage; but it should not be attempted in light winds, as vessels are liable to be becalmed, and to experience flaws under the high land of Taou-hwa-shan. The passage is 8 miles through, and from its N.W. entrance to Roundabout Island the distance is 5 miles N. W. $\frac{1}{4}$ N."

Sarah Galley Passage.

"SARAH GALLEY PASSAGE is by no means so eligible as those passages already mentioned. The entrance is N. by E. 21 miles from the Quesan group, and near it will be seen the Jansen Rock, a steep cliff islet, with a reef $1\frac{1}{2}$ cables from the eastern extreme. Another rock, uncovered at half-tide, bears from the Jansen W. 25° N. $1\frac{3}{4}$ miles. From it the highest part of Oswamong (Ou-sha-kan) Island bears N. 15° E. $1\frac{3}{4}$ miles, and the highest part of Taou-hwa-shan W. $\frac{1}{2}$ S. The coast line of Oswamong is high cliffs, and off the western extreme is a ledge of rocks. Oswamong is called Woosha or Usha (that is, *black sand*) by the Chinese."

"West of Oswamong 5 cables are two patches of rock, lying N.E. $\frac{1}{2}$ N. and S.W. $\frac{1}{2}$ S. from each other, not quite 2 cables apart. From the S. Western patch, the Jansen bears S. E. $\frac{3}{4}$ S., and a flat peaked island between them and Taou-hwa-shan W. by S. $\frac{1}{2}$ S. Very high tides may cover them, but they are usually above water. The distance between them and some rocks extending from the north extreme of the flat peaked island is 7 cables. There is no bottom with 31 fathoms in the vicinity of the rocks; after passing which, the course is North $2\frac{1}{4}$ miles, leaving two small islets, with a reef between them, to the westward. The channel is here 7 cables broad, between Teng-fow on the West, and an island with a hut on the summit, and a reef of rocks off its south extreme, to the eastward."

"From hence the course is N. N.W. $\frac{3}{4}$ W. 1·7 miles; the channel is now $1\frac{1}{4}$ miles broad, between a small island, with two hummocks on it, and an island to the northward, with a building, something similar to a Druidical temple, on its summit. Between this island and Choo-kea-tseen the mud dries nearly all the way, leaving only a small passage for boats. In standing over to the Choo-kea-tseen shore, vessels should not bring a small flat islet, with two rocks off its S. E. extreme, to bear to the westward of W. 15° N., as the depth of water decreases very suddenly."

"Off the south end of the island with the Druids' temple on it, the mud dries $1\frac{3}{4}$ cables. From mid-channel here, the small flat island above mentioned, which is at the N.W. extreme of the Sarah Galley Passage, bears W. N.W. $2\frac{1}{2}$ miles."

"Before reaching it, the S. E. extreme of Chusan will be seen. There is a building constructed of slabs of stone (similar to the one on the island) on the hills over the point, and a small tower and fort near the water's edge. From the Flat Island to Roundabout Island, the distance is $7\frac{1}{2}$ miles W. 7° S."

"Between Choo-kea-tseen and Oswamong there is another passage, 2 cables wide, which may be used with a fair wind, by which means reefs in the Sarah Galley Passage will be avoided. Off the east end of Oswamong there is a small island."

"The passage between Teng-fow and Taou-hwa-shan is very narrow in one part."

"CHOO-KEA-TSEEN is 6 miles from North to South; the coast line has many deep indentations, some of which are enclosed from the sea by stone walls. Near the southern extreme are four high peaks, and near the centre of the island is a smooth cone-topped one, which is 1,164 feet above the sea, and forms one of the most remarkable features in this part of the archipelago. On the north face of the island are several sandy bays, and the hills in this neighbourhood are covered with large isolated masses of granite." Choo-kea-tseen.

"Off the N.E. extreme is a group, consisting of five islands, called Loka by the Chinese; and to the eastward are three small islets, the easternmost of which is $8\frac{1}{2}$ miles distant. A HALF-TIDE ROCK bears E. by S. $\frac{1}{2}$ S. 7 miles from the conical hill." Loca Islands and Half-tide rock.

"The ISLAND OF CHUSAN, so called from its supposed resemblance to a boat, is $51\frac{1}{2}$ miles in circumference; its extreme length being 21 miles in a N.W. and S.E. direction. The greatest breadth in any part is $10\frac{1}{2}$ miles. From the beach at Ting-hae to the northern shore the distance is 7 miles. Towards the east end of the island it becomes narrower; never, however, being under 6 miles." Chusan.

"THE TING-HAE HARBOUR is difficult of access in all its approaches, owing to the strong tides and sunken rocks; the best passage is that round Tower Hill and between Bell and Tea Islands, in which no hidden danger has been found: the tides, however, set at the rate of 3 and $3\frac{1}{2}$ knots, and vessels in light winds must be careful that they are not set into the archipelago between Tea and Elephant Islands, where the ground is foul and the narrow channels deep. Between Tower Hill and Bell Island from 30 to 50 fathoms will be found; both islands are steep to." Ting-hae Harbour.

"From off Roundabout Island the course for vessels bound to Ting-hae by the Western or Tower Hill Passage is W. by N. 8 miles; when, having passed the south point of Tower Hill Island (Ta-maou-shan), you can haul up, steering first for Bell Island (Ha-tse), and then for Tea Island (Pon-tse-shan); or intending to enter the harbour by the Ho-chow-moon or South Passage by Elephant Island, the course is N.W. by N. $4\frac{1}{2}$ miles. Care should be taken to keep well to the northward, otherwise, in light winds, the flood tide will set vessels past Tower Hill, and no anchorage will be found until in the neighbourhood of Just-in-the-way." Western or Tower Hill Passage.

"ANCHORAGE. Between Bell and Tea Islands eligible anchorage in from 9 to 12 fathoms will be found by keeping in mid-channel. On proceeding from thence to the inner harbour care should be taken to avoid the strength of the tide, which, unless there is a breeze, will set you through the southern passage: the anchoring ground on the Chusan shore is steep to, and the tides are irregular, but it is convenient for watering. A sunken rock, with 3 fathoms over it, lies due South from a small hill near the shore in the valley $2\frac{1}{4}$ cables off shore. The middle ground in the inner harbour has but two feet in its shoalest part."

"MIDDLE GROUND. Tower hill in one with the slope on the southern rise of Tea Island will keep you in 4 fathoms: the 3 fathoms line extends within $2\frac{3}{4}$ cables of the island of Wae-woo-kwei-san, which must be steered for after passing Guard-house Island, one cable in width; and also between the Middle Ground and the shore of Chusan, there are 15 or 16 fathoms, the distance being $1\frac{1}{4}$ cables. The channel between Guard-house Island and Chusan is fit only for boats." Middle Ground.

"The STRAIT OR SOUTH CHANNEL, between Deer and Elephant Islands, is an unsafe entrance; two sunken rocks lie near the centre of the passage, which narrow it to $1\frac{3}{4}$ cables. Vessels should not attempt the passage, unless they have a commanding breeze, and are acquainted with the localities of the rocks and the set of the tides. The outside anchorage for this passage is abreast of Elephant Island, in 16 and 17 Strait or South Channel.

fathoms; the holding ground, however, is not good, and vessels entering farther will find deeper water and stronger tides, and it is by no means so well sheltered as that between Bell and Tea Islands."

Elephant Island. " ELEPHANT ISLAND (Tsik-ya-shan) is remarkable for a curious crag near the summit, and cannot be mistaken. Beyond Round Island (a small islet to the N. E. of Elephant Island) the water deepens from 28 to 34 fathoms until you arrive at the Southern Rock,* which lies S. 63° E. 2 cables from the Black Rock, and N. 75° E. 1¾ cables from the ledge extending from the island to the southward of Tea Island; the marks for it are the Joss-house, on the hill near the suburbs, shewing between Trumball and Sarah Galley Islands, and Cap Rock on with the saddle of Kin-tang or Silver Island. The rock has but 9 feet over it at low water springs. The Northern Rock lies N. 3° W. 1¾ cables from it, and has also 9 feet on its shoalest part; in extent it is larger than the others, and steep to on all sides. The marks for it are, the north extreme of Black Rock touching the mound on Cap Island, the Joss-house Hill seen clear of Trumball Island, and a bushy tree on the S. E. slope of Sarah Galley Island in line with the square beacon on the hills."

"The navigation of the passage is rendered more difficult in this immediate neighbourhood, by the tides which meet from four different channels forming eddies, which render vessels totally unmanageable in high winds. From the sunken rocks to Wae-woo-kwei-san there is no danger, and by hauling close round the latter island the middle ground will be avoided."

"To avoid these dangers the best direction is to keep the western shore on board, taking care to avoid the ledge of rocks which extend three-quarters of a cable from the island, South of the Cap and Black Rock; the latter is steep to. At this part of the channel the bottom is rocky and the depth very irregular. Having passed Sarah Galley Island, steer for Macclesfield Island (Wae-woo-kwei-san), which may be rounded close to avoid the Middle Ground."

Deer Island Passage. " DEER ISLAND PASSAGE is another channel, which is preferable to the one last named; it is between Deer Island (Seao-keu-shan) and Sarah Galley Island; it is 1¾ cables wide, and the sunken rocks are avoided by keeping Deer Island on board. A mud spit extends three-quarters of a cable's length from the north end of Deer Island, but it does not interfere with the passage. The N. E. beacon may be approached on either side within a quarter of a cable, and the Chusan shore is steep to. Abreast Ta-woo-kwei-san the passage narrows to one cable, but the danger is marked by a stone beacon, which shews at all times of tide. West of the beacon is a shoal patch, which, by keeping the Chusan side until Sarah Galley shuts in with Trumball, will be avoided. It has 9 feet water on the shoalest part."

" Between Trumball and Sarah Galley Islands there is a convenient anchorage in 9 and 10 fathoms; the 3 fathoms line extends 3¼ cables south-easterly from Trumball, but by bringing the south extreme of Wae-woo-kwei-san in line with the highest part of Tea Island, its extreme limit will be marked. This passage offers the advantage of being the only one in which the same tide will carry you into the harbour."

" Ships bound from Chusan to Ningpo should pass between Bell and Tower-hill Islands, and not between Bell Island and Chusan; as in the latter passage there are some sunken rocks, besides those upon which the beacon stands, and the tides are very rapid."

Tinghae City. " The city of TINGHAE is 1 mile and 8 cables in circumference, and is surrounded by a wall, 14 feet 9 inches high and 13 feet wide, surmounted by a parapet, 14 feet

* This rock is called Melville Rock in the Admiralty Chart, H. M. S. Melville having struck on it.

6 inches high and 2 feet wide: the south face runs East and West, the west face North and South; the east face runs North 350 yards, and then North-west. The north face is irregular on the north-west side; the city is overlooked by a hill, part of which is enclosed by the wall. A canal, 33 feet wide and 3 feet deep, nearly encircles the city, and enters it near the south gate."

"Canals form the principal means of transportation, the roads being merely foot-paths: every large field has its canal for the purpose of carrying away the produce." Canals.

"There are four gates, each of which has two arched entrances, one being at right angles to the other; the arch of the outer one is 7 feet 6 inches wide and 9 feet high; the principal streets are 17 feet wide, and badly flagged; the houses are irregularly and badly built, and generally of one story."

"The south gate is 5½ cables from the sea; a canal and paved footpath lead from the suburbs: the principal means, however, of communicating with the sea is by a canal further to the East."

"Large quarries of hornstone porphyry are found in the north-west extreme of the island, from which large blocks are hewn. The stone beacon on one of the reefs is a circular pillar, 13 feet high and 5 feet in circumference. Mill-stones and slabs of this appear to be an article of exportation."

"In the preparation of salt from sea water, great numbers appear to be occupied during the summer. A distillery of spirit from rice and a manufactory of mats form other means of employment."

"Water is not good, and is sometimes scarce; the tanks in the rice fields near the sea being the only supply, excepting wells, which afford but a limited quantity; no running streams have been found. The place latterly adopted for watering by the men-of-war is in the bay West of Guard-house Island." Water and other supplies.

"Fresh beef is plentiful, bullocks selling at from 8 to 15 dollars. Goats, ducks, pigs, and fowls, are also to be had at a reasonable rate; vegetables of all kinds are plentiful, and good sweet potatoes, forming the staple of the people's food. The ridges of all the hills are cultivated in the most careful manner, the barren spots been devoted for their burial-grounds. Extensive stone embankments prevent the encroachment of the sea on the rice fields, and a vast quantity of valuable land has been gained in this way from the sea."

"During the month of September, the thermometer in the shade ranged from 71° to 102°, its average height during the day being 85°. The prevalent winds during the month were from the eastward, and the weather was very fine." Temperature.

"The range of temperature in the month of October is from 51° to 92°: the prevalent winds during this month were from north-westward. The barometer, generally speaking, stands high, and rises with strong north-westerly breezes sometimes to 30·34 inches: during this month much rain fell, and the sky was generally overcast."

"A tide register was kept during the day at the observatory, by the signal-man, and upon full and change days equal levels were observed by either Mr. Symonds or myself, which give for the time of high water on those days, one hour before the moon's transit; scarcely any change takes place in the depth of water three-quarters of an hour previous and subsequent to the time of high water, but at low water the change occurred more rapidly; the extreme rise and fall observed was 12 feet 3 inches, ordinary tides 5 to 7 feet. Strong westerly winds sometimes cause a difference of 2 feet in the rise and fall. In all the channels, generally speaking, the change in the direction of the stream does not take place until 1h. 40m. after Tides.

the change in the depth: at the anchorage off the Elephant from the S. E., and between Bell and Tea Islands, ships flood-rode tend to the northward."

Position. "The latitude of the observatory was determined by circum-meridian altitudes of stars, with a small azimuth and altitude instrument, the result of which gives 30° 0′ 19″ North: the longitude was determined by a series of moon culminations, 68 in number, which, worked with the moon's computed right ascension, give 8h. 8m. 20s. easterly. A short run from Loo-choo, in H. M. S. Cruiser, enabled me to connect Captain Beechey's position of that place with the observatory, and it differs only 2m. 5s. to the East: the meridian distances by the different ships from Singapore range from 121° 58′ to 122° 20′. Few of the ships, however, had opportunities of obtaining rates for their chronometers."

"In the foregoing remarks, the names of the islands have been taken from Thornton's Chart."

Ports in the island. "Besides the city of Ting-hae, there are three other commercial ports on the island: *viz.* Sing-kea-moon, Sing-kong, and Siao-sha-ao."

"The first is situated at the S. E. extreme of the island; the town is close to the water's edge, and is a miserable assemblage of huts. The principal occupation of the inhabitants is fishing; about 35 junks of 80 to 100 tons, carrying 30 to 35 men, and 200 smaller boats, each carrying 5 men, are employed for this purpose. The harbour is formed by the Island of Lowka, which is divided into six parts at high water, and is $1\frac{1}{2}$ cables wide, with $4\frac{1}{2}$ and 5 fathoms abreast of the town. The S.W. entrance lies between Lowka and Siao-kan, and has not more than $2\frac{1}{4}$ fathoms at low water. A reef and mud spit extend easterly from Siao-kan one cable, and the mud extends westerly from Lowka $4\frac{1}{2}$ cables. H.M.S. Pylades lay at anchor, between Siao-kan and Chusan, in 5 fathoms, the width here being $2\frac{1}{2}$ cables. The high land on the Chusan shore, 600 feet, occasioned the squalls during the North-west Monsoon to be sometimes very violent. H. M. S. Conway lay at anchor to the westward of Lowka, with the small flat island at the entrance of Sarah Galley Passage bearing West three-quarters of a mile, in 5 fathoms."

"The distance from Sing-kea-moon to Ting-hae is $11\frac{1}{2}$ miles. The channel along the Chusan shore has deep water; it is not, however, available for ships, owing to a number of small islets 3 miles east of the suburbs, which render the passage narrow and crooked. This spot is called by the Chinese Ske-lu-moon, or the Sixteen Passages. Several islands with extensive mud-banks confine the channel beyond to a cable's width; in some places it is only half a cable wide. Vessels, therefore, bound from Ting-hae to Sing-kea-moon, must use one of the passages already described in the sailing directions for Ting-hae; or by passing to the northward of Deer Island and the island East of it and South of Ao-shan. This passage has deep water, except at the S.E. entrance, where there is only 3 fathoms."

"In the bay between Takan and Ao-shan there is shoal water; to avoid which, vessels should not stand so far to the northward as to bring the reef of rocks off the south point of Ao-shan in a line with the crag on the summit of Elephant Island."

"The deep water extends $2\frac{1}{2}$ miles to the eastward of Roundabout Island, from whence to the entrance of the Sarah Galley Passage there is anchorage all the way."

Channel between Pooto and Chusan. "The channel between the east end of Chusan and the Island of Pooto has only $1\frac{3}{4}$ fathoms at low water, and off the S. E. end of Chusan is only 2 cables wide, owing to a reef, with a stone pillar on it, near the centre of the passage. After rounding the flat island with the two rocks off it, the beacon will be seen N. 35° E. Vessels should

stand to the eastward, so as to bring it in a line with a cliff islet off the N. E. extreme of Chusan; which is the leading mark up to it in the deepest water. Care must be taken not to approach too close either to the Lowka shore or to the shore of the island with the Druid's temple on it; shoal water extending $3\frac{1}{2}$ cables from the former, and 6 cables from the latter."

"Pass between the Beacon Rock and Chusan, and bring the knob or cliff island mentioned above in a line with a building (formed of slabs of stone) on the summit of the flat peninsula at the N. E. end of Chusan. Steer for them until the north end of Loka (the group of islets N. E. of Choo-kea-tseen) opens to the northward of a flat, peaked rock South of Pooto, when you may keep over towards the latter; the water will deepen suddenly from 2 to 6, and then 12 fathoms. The $2\frac{1}{2}$ fathoms line extends $1\frac{3}{4}$ miles, and some hard casts were obtained on the flat; vessels therefore should cross it under easy sail. After passing the flat, a small islet will be seen three-quarters of a mile to the northward, which may be steered for if bound to the north side of the islands. A reef extends a short distance east of the Knob Island, on the Chusan side, and another 2 cables from the N.W. point of Pooto."

"Between the peaked rock to the southward of Pooto (mentioned as the mark for crossing the flat) and that island, there is good anchorage in 10 and 12 fathoms water. From Pooto to the rock the distance is 7 cables. Good water may be obtained from a well near a joss-house, in a sandy bay at the S.W. extreme."

"The Island of Pooto is $3\frac{1}{2}$ miles from the S.E. point of Chusan, and $1\frac{1}{2}$ miles from the east point; the channel is termed by the Chinese Lien-hwa-yang. The island is $3\frac{1}{2}$ miles long, and in one part is only half a mile broad. A narrow projecting point extends from the west side, forming a sandy bay, with 3 fathoms in it. A stream runs into the bay, which might be used during the North-west Monsoon by vessels in want of water. There are two reefs in the bay, but they are always above water. This island and Choo-kea-tseen belongs to the priests of Budha. The temples on the former are very numerous, the largest of which is situated on the west side of the island; a broad flagged road leads to it from the south side." Pooto Island.

"Sing-kong, or Chin-keang harbour, is situated at the western extreme of the Island of Chusan, and is distant $7\frac{1}{2}$ miles from Ting-hae; it is formed by the three islands Waiteao, Chungteao, and Leteao and Chusan. From Chusan Inner Harbour to the S.W. point of Chusan the distance is 4 miles. The passage between Bell Island and Chusan is not recommended; near the centre is a half-tide rock, with a beacon on it, and to the S.W. of it two cables a rocky patch, with only three-fourths of a fathom on it. Vessels, therefore, bound to Sing-kong, had better use the passage between Bell Island and Tower Hill. Should, however, the other be used, that part between the Beacon and Chusan will be found the best. Between Kiddisol, or Yang-lo-shan, the channel is $1\frac{1}{2}$ cables, and there is deep water. On a hill near the S.W. part of Chusan are three beacons, similar to those in the vicinity of Ting-hae. From the point, the coast line trends to the N.W., and is mud all the way to the point of Sing-kong Harbour, with the exception of a small inlet, to the N. E. of which there is a hill with a single beacon on it. Anchorage will be found all along this shore in from 10 to 12 fathoms." Sing-kong.

"A small islet, called the Steward, or Paun-yang, lies mid-way between Chusan and Kintang. There is deep water, 45 fathoms, in its vicinity, and also between it and Kintang; 2 cables to the eastward there is a rocky patch, on which 9 fathoms were found. A reef of rocks (the Pelican Rock) always above water lies off the S.W. point Steward Island.

of Waiteao, and a mud-bank extends from the island nearly to the reef. Between Waiteao and Chusan the distance is 6 cables, with 7 and 8 fathoms water—the mud extends three-quarters of a cable from the island. On the Chusan shore is a fort, which can only be approached by the embankments."

"Opposite the Island of Chung-teao the channel is rather less than a cable wide, with 7 fathoms water, and takes a north-easterly direction; the width does not increase until you are past the Island of Leteao, opposite to which is the landing place and the mouth of a stream. There are a few houses near the beach, but the town is situated a mile inland. The stream is navigable for boats up to it at high water. Upon the islands forming the harbour, and also on the point at the entrance, are extensive quarries."

"The passage through is $1\frac{3}{4}$ miles, and being both narrow and crooked, is only available for steamers or small vessels."

Kutsu Island. "To the northward of Leteao is a flat island, called Kutsu; a reef of rocks extends from it towards Chusan, narrowing the passage to one cable; in it there is no bottom with 30 fathoms. Between Kutsu and Blackwall, or Tsat-seu, the distance is 3 cables."

"The eastern side of Blackwall has several deep bays, and a rock lies $1\frac{1}{4}$ cables from the N. E. extreme. The depth of water between this point and Chusan varies from 12 to 19 fathoms."

Kin-tang. "From the Steward to Kin-tang the distance is 2 miles; near the S. E. extreme of the latter is a remarkable Saddle Peak, 1,433 feet high, which with the Cap Rock forms one of the marks for the southern sunken rock in the How-chow-moon. There is a peninsula connected by mud, which is overflowed at high water, at the S. E. point, from which a ledge of rocks extends; the south-western part of the ledge is always above water. Nearly opposite Sing-kong there is another peak, on Kin-tang, which is 1,519 feet high."

"Vessels bound from Sing-kong to Siao-sha-ao, or to sea by the N.W. passage, must bear in mind that there is no anchorage after leaving Sing-kong until to the northward of Blackwall, the distance being 6 miles."

"The channel between Kin-tang and Blackwall is half a mile wide; a small islet lies off the S.W. extreme of the latter, from the summit of which Ching-hae, at the entrance of the river leading to Ningpo, may be seen over Kin-tang. The islet is steep to, and there is deep water between it and Blackwall. After passing the islet there is a long bay in Blackwall Island, from the north point of which a reef extends $1\frac{1}{2}$ cables. Off the north extreme of Kin-tang there is a group of five islands."

Broken Island. "The northern rock off Broken Island, or Mamu, bears from the north extreme of Blackwall, N. 15° E. $6\frac{1}{2}$ miles; between it and Broken Island there is a good channel. The latter is connected with Chusan at low water, and is about 700 feet high. The ridge of hills at the N. E. end of Chusan rises to the height of 761 feet, and on the hills are three beacons. To the N.W. of Broken Island, 3 miles, there is a group of one large and four smaller islets."

Siao-sha-ao. "The entrance to the harbour of Siao-sha-ao is between Broken and Fisher Islands, (Chung-pih-shan), and is 6 cables wide. Broken Island is steep to, except on the S. E. side, where it joins Chusan. The 3 fathoms line extends 5 cables off the west side of Fisher Island. The harbour is formed by this island and Chusan; it is 2 miles long and $1\frac{3}{4}$ broad, with a depth of water from 5 to 9 fathoms; it is sheltered from all winds, and is easy of ingress and egress. The coast of Chusan is lined with a mud-bank, which renders landing difficult except in one spot at the east end of the harbour, unless it be

high water. Near the landing place are a few houses; the town is some distance up the valley. The south shore of Fisher Island is also an extensive mud-bank, a considerable portion of which is enclosed by walls from the sea. Off the S. E. extreme of the island, the 3 fathoms line extends 5 cables: the depth decreases gradually, so that the lead will give warning. The eastern entrance to the harbour is 8 cables wide. A small islet and a rock lie off the north end of Fisher Island, and a group of 4 islets off the N. E. extreme. These may be rounded close, passing between the four islets and three others further to the eastward." Fisher Island.

"Vessels intending to go to the eastward from Siao-sha-ao may pass between Sheppey (Lan-seu), and Chusan, or to the northward of Sheppey. The latter is the better passage of the two: the former is 2 cables wide in the narrowest part. On leaving Siao-sha-ao, keep along the Chusan shore, passing a rocky point with an islet off it; a cliff rock, the outer of three islets, will then be seen to the westward. Pass to the northward, or between it and the Hornblend islets (three islets on the west side of Sheppey). Two miles and a half to the S. E., a cliff island, with a peak on its south end, will be seen; and abreast of it, on the Chusan shore, are three islets. The channel lies between these three and the cliff island, off the S.E. point of which is a small islet, with two rocks off its S.E. end: the passage is between it and Chusan, from whence a west course will take you to the open sea." Passage eastward of Siao-sha-ao.

"The northern passage lies between Sheppey and Kwan-shan. On leaving the anchorage at Siao-sha-ao steer a N. E. by E. course for a long barren island, with a round peak upon it, the distance between which and Sheppey is 1½ miles. A mud-bank runs off the latter 5 cables. To avoid this bank, do not bring the north point of Sheppey in contact with the north point of the largest island between Sheppey and Kwan-shan, or keep the barren island on board, which is steep to on the S.E. side. Kwan-shan lies West from the barren island 1¼ miles; a course must be steered to pass close to it in order to avoid a reef, which is covered at high water. It is distant from Kwan-shan 2¼ cables. From it the highest part of the barren island bears W. ½ N., and the highest part of Sheppey S. S. W. ½ W. Having passed the reef, the large island, mentioned as the mark for avoiding the mud-bank off Sheppey, bounds the passage to the southward; its northern point is rocky. To the eastward of Kwan-shan are nine islands, lying off the S.E. end of Tae-shan; off the south point of the nearest to Kwan-shan is a reef; these extend 2½ miles farther, when the channel to the northward, between Tae-shan and Chang-too, will be seen. A course W. by S. may then be steered along the coast of Chang-too, which has many deep bays, and several islets off its south side." Passage between Sheppey and Kwan-shan.

"Vessels wishing to anchor on the S.W. side of Sheppey, which will be found a secure anchorage in the North-west Monsoon, may haul to the southward, after passing the first island to the eastward of the large Passage Island, between Kwan-shan and Sheppey. To the eastward three-quarters of a mile is a cluster of rocks."

"The east end of Sheppey is a low cliff, which may be passed within a cable: good anchorage will be found in 5 fathoms, the water shoaling gradually towards the shore. The Island of Sheppey is 7½ miles long and 5½ broad. On the east side are several deep sandy bays. A considerable portion of the S. E. extreme is separated from the island by a narrow channel at high water. The island appears formerly to have been two, the land being very low, and protected from the sea by walls near the north end. H.M.S. Pylades anchored here in the month of February, in 5½ fathoms, half a mile from the east end of the island bearing N. ¾ W. The island South of Sheppey bore S.W. by W., and the highest part of Chusan S. ¾ E. To the eastward Sheppey.

of Sheppey are two cliff islets; the nearest is $1\frac{3}{4}$ miles distant, and the other $4\frac{1}{2}$ miles. South from the nearest, 2 cables, is a ledge of rocks, which is sometimes covered. W. N.W., half a mile from the eastern, is another small islet. The depth of water to the eastward of Sheppey gradually increases; there are $8\frac{1}{2}$ fathoms when Pooto bears South."

North coast of Chusan Island. "The coast line of Chusan to the eastward of Sheppey trends to the S.E.; at the distance of three miles there is an island, with a narrow passage between it and the shore, and a deep bay to the westward of it, in which the mud dries out a long way, rendering it difficult to land except at the extreme points. Three miles and a half farther to the S. E. there is a larger island, with a remarkable *fall* in the hills near its centre; a small islet lies half a mile West from its north extreme. To the eastward are three islands, at the distance of half, $1\frac{1}{2}$, and $3\frac{1}{4}$ miles. The nearest is the largest of the three, and has a patch of rocks 2 cables from it to the N. E. North-east also from the central one of the three is another patch of rocks, distant 4 cables from the island. The outer island is the one mentioned to be steered for, in the directions for passing between Pooto and Chusan: it is a small cliff island, with a rock off its N. E. side. Between Fall Island and Chusan are two small islets; another bay on the Chusan shore is formed to the westward, and from hence to the peninsula at the N.E. extreme of the island the coast is nearly one unbroken line. The hills approach very close to the shore at the N.E. extreme, and attain an elevation of about 1,100 feet. There is another low, flat island between Tsae-wha and the peninsula."

Fall Island.

Tae-shan. "To the N.E. of Fisher Island is the Island of TAE-SHAN, which is very populous. The centre of the island is an extensive plain, with many villages. Near the eastern extreme, also, the hills separate, leaving a level plain across the island. Mid-way between Fisher Island and it are two small islets, and between the north end of Barren Island and it are three others, off the south end of the western of which is a rock. Rocks also extend off the S.W. and north points of the centre island of the three. A mud-bank extends from the N.W. point of Barren Island, nearly to the first islet of the three which lie to the north-westward of it. Between them and Tae-shan the bottom is sand, and the soundings are irregular."

"The passage between Kwan-shan and Tae-shan is 3 cables wide: on the Tae-shan shore are several small islets. H.M.S. Pylades anchored in a small cove to the N.E. of Kwan-shan, formed by the islets lying off the S. E. end of Tae-shan, and rode out a heavy gale; the cove, however, is too small to be recommended. The deep water in its immediate vicinity is also disadvantageous."

"To the westward of Tae-shan the islands extend about 15 miles, and from its summit the termination of the group northerly could not be defined."

Chang-too. "Chang-too (probably the Blackheath of Thornton's chart) is separated from Tae-shan by a channel $1\frac{1}{2}$ miles across. The southern face of the island has many deep indentations, and may be divided into several islands; the time allotted for the service not admitting a closer investigation. The breadth of the channel between it and the islets to the eastward of Sheppey is 2·3 miles. The group of islands continue to the eastward of Chang-too, and a little to the southward of the same parallel, for 25 miles."

Eastern Islands. "The easternmost island is in lat. 30° 7′ 45″ N., lon. 122° 46′ 30″ E. From the anchorage under Sheppey, it bears E. $\frac{1}{2}$ S. 27 miles; from the summit of Pooto E. by N. $\frac{3}{4}$ N. 21 miles; and from the outer islet East of Choo-keat-seen, N. E. $18\frac{1}{4}$ miles. It is 5 miles in circumference, and about 500 feet high. There is a small village on

its N.W. side: the shores are precipitous cliffs. Two small islets, nearly level with the water's edge, lie N. 74° E., about 2 miles from its summit. The intervening islands between this island and Chang-too were not closely examined; their outlines only have been inserted in the chart."

"Ships bound to the north side of Chusan ought to make the land in about 30° N.; when the easternmost island of the northern group will be seen to the northward, and the high land of Choo-keat-seen to the westward. On closing the land, the three small islets to the eastward of Choo-keat-seen will be made out, and also the island of Pooto, which may be known by a small look-out house on its summit." Directions for ships visiting the north side of Chusan.

"Intending to communicate with Sing-kea-moon, the most eligible anchorage will be found to the southward of Pooto, for which a course may be steered to pass between that island and Loka (the island to the N.E. of Choo-keat-seen), taking care to avoid the half-tide rock, which lies E. by S., 9 miles from the summit of Pooto."

"To the northward and north-eastward of Pooto are three islets and three rocks, which are steep to, except to the westward of the southern or largest of the three, where there is a reef. To the N.E. of these islands, and 3½ miles from Pooto, is a small conical islet. E. ¾ S. from it is a group of four sharp pinnacled rocks, with several reefs among them. The half-tide rock, mentioned above, lies S.E. ¼ S. 6¼ miles from these rocks."

"Vessels bound to Sheppey, or Siao-sha-ao, should pass to the northward of the four pinnacled rocks, and steer a West course for the island of Sheppey, which will be recognized by a conical hill."

"CHIN-HAE, in about lat. 29° 58′ N., lon. 121° 35′ E.,* is the maritime town of the river Ta-hae, or Ning-po River, the city of NING-PO being about 4½ or 5 leagues to the westward of the river's entrance, or 14 or 15 leagues to the westward of Chusan Harbour; there is a channel leading to it from Ke-to Point, another from Chusan Harbour, and a northern channel between the coast and the northernmost of the Chusan Archipelago, which also leads to Chusan Harbour. Close to the entrance of Ning-po River lie Yew-shan and Foo-sun, small islands with connecting shoals, betwixt which and the east point is the proper channel, having 4 or 4½† fathoms on the bar at high water, and 5 to 6½ fathoms inside. Chin-hae is a Heen or city of the third class, and stands on the west side the entrance of the river, which in front of Chin-hae is nearly half a mile wide, with 6 and 7 fathoms water, and excellent anchorage; at present, ships of any burthen may enter the river at half-tide; the only difficulty is in the narrow passage close to Foo-sun, the Crouching Tiger, where, if the wind was not fair, it might be prudent to warp about 300 yards. There is a passage between the Isles Yew-shan and Foo-sun, with 6 to 8 fathoms water, but the anchorage here is not good, owing to violent and irregular eddies. Since the year 1756, English ships have not traded to Chusan, nor to Ning-po River; but there is much trade carried on by the junks from hence to the Japan Islands, distant about three or four days' sail. From Ning-po River the coast stretches about 8 or 10 leagues N. Westward to Hang-chow-foo Bay, which is little known to Europeans, but is extensive, stretching a great way inland, and thought to have shoal soundings over a flat bottom." Chin-hae. Ning-po River, and contiguous coast.

KIN-TANG, or GOLDEN ALTAR, lying between the west end of Chusan and the Kin-tang.

* It is placed in lat. 29° 54′ N., lon. 121° 52½′ E., by Captain Rees, of the Amherst, who touched here in 1832, and made a cursory survey of the entrance of the river Ta-hae and the adjacent localities.

† In the year 1757, it appears that little more than half that depth was found on the bar at high water.

entrance of Ta-hae, or Ning-po River, is an island of quadrangular form, 3 or 4 leagues in diameter, alternating in beautiful hills and valleys, highly cultivated. The channel between it and Chusan contains several islands, but is little known, nor has any safe harbour been found on the southern coast of Kin-tang, for in most of the deep bays here, and on the western side of the island, the water is of too great a depth for anchorage till almost close to the shore. The Sylph, however, 22nd January, 1833, after sounding in these bays, proceeded along the southern coast to the eastward, and perceiving a number of junks at anchor, she ran in and anchored among them in 13 fathoms, not good bottom, and half a ship's length outside, no ground at 30 fathoms. This bay, called Ne-wan, is in about lat. 29° 56′ N., near the S. E. end of the island, and is sheltered from West to E. S. E. by high hills, but it is not a safe anchorage.

Taou-tsze Harbour.

TAOU-TSZE HARBOUR, formed between the small island of this name and the N.W. part of Kin-tang, is in about lat. 30° 3′ N., and 4 leagues to the north-eastward of Chin-hae, having the larger one, called Ta-ping-shan, or Great-even Island, to the North and N.W., by which this harbour is well sheltered in good anchorage of 8 to 5 fathoms, on the N. E. side of Taou-tsze. The entrance into the harbour is between the south end of the last-named island and Kin-tang, and although the harbour is apparently a quarter of a mile wide by the survey of Captain Rees, of the Amherst, it seems rather contracted for large ships. The soundings between Chin-hae and this harbour are from 12 to 9 fathoms, even bottom. From the N.W. end of Taou-tsze and the south end of Ta-ping-shan, sand-banks project, precluding an entrance into the harbour between these islands.

Chusan Northern Group.

THE CHUSAN NORTHERN GROUP consists of numerous islands, mostly barren or rocky, and extending a considerable distance to the northward of Great Chusan. They are not explored nor known to European navigators: the outermost of them are the following small islands, far detached from the principal group.

TUNG-CHA-SHAN, two or three small isles, in about lat. 30° 17′ N., lon. 122° 46′ E.

TCHIN-SHAN, in about lat. 30° 29′ N., lon. 122° 56′ E., are two small islands, having soundings of 35 fathoms about 6 leagues outside of them. To the N.N.E. of these, in about lat. 30° 48′ N., lon. 123° 8′ E., lie the small isles Te-chong and Pa-cha-shan, with soundings of 30 fathoms about 5 or 6 leagues to the eastward; the soundings extend a great way out from this part of the coast, with strong tides or currents, veering all round the compass in 10 or 12 hours.

Although Han-chow, or Hang-chow Bay, and Chusan Northern Group fronting it, are nearly unknown to Europeans, there is a navigable channel, or inner passage, for vessels at a moderate draught of water, across the mouth of the bay, and near to the westernmost islands of the group, through which the ship Amherst passed in June, 1832, and the Sylph in January, 1833.

West Island.

From Taou-tsze Harbour, at the N.W. end of Kin-tang, the course by the inner passage is about N. by W. $\frac{1}{2}$ W. and N.N.W. 11 or 12 leagues, to pass to the westward of West Island, in lat. 30° 37′ N., lon. 121° 51′ E., having passed previously near to S.W. Island, which is in lat. 30° 14′ N.; but the course must be regulated by the tides, which run strong during the springs; the soundings in this track were from $4\frac{1}{2}$ to 7 fathoms, soft bottom. A small group of isles lies 4 or $4\frac{1}{2}$ leagues to the westward of West Island, and to the N. N. Eastward of it about the same distance, North-west Island, or Round Island, is in lat. 30° 48′ N., and North Island about

4½ leagues E. N. E. of the latter. The passage between these islands and the low coast has soundings of 6 to 4 or 3½ fathoms; the channel of Tsung-ming, or Shan-hae, lies to the north-west, and the passage out to seaward, in an easterly direction.

HANG-CHOW BAY is the deep inlet inside the northern islands of the Chusan group, at the head of which is the entrance of the Tchen-tang-kiang, the river leading to Hang-chow city; the bay is very little known. Hang-chow Bay.

The Sylph, after weighing in the morning from Woo-sung (a port in the entrance of the Yang-tsze-keang), steered to the S. E. in 3 and 3½ fathoms, increasing to 4 and 4½ at 10 A.M., and to 5 soon afterwards. At 11, she saw Round Island when steering S. S.W. in 6 and 7 fathoms, regular soundings. At 7 P.M. she anchored in 6 fathoms, three islands in sight, the central one bearing W. by N. 10 miles.

January 7th, she weighed at 8 A.M. with the favourable tide and a light north wind, steered W. N. W., saw the coast bearing from W.N.W. to N. N.W., appearing rather higher than about Shang-hae. The tide set her through between the three islands mentioned, where she had no ground at 40 fathoms, but soon after got ground in from 17 to 14 fathoms, and anchored, observed lat. 30° 40′ N.

Ping-hu-heen, a walled city, was seen from her anchorage, bearing N. N.W. distant 6 miles. At 4 P. M. she weighed and steered for the city, off which she anchored in 5 fathoms, extremes of the coast from W. by S. ½ S. to N. E., extremes of the three islands from E. S. E. to E. by N., extremes of the high land appearing like islands from W. by S. to S.W. by W. ½ W., city of Ping-hu-heen N.W. She found the tide running 5 miles an hour, preventing a boat being sent on shore till slack water, when a mud flat was found to front it, at the distance of about a mile, rendering landing there impossible. January 8th, at daylight she weighed and steered S. Westward for what appeared a group of islands, which proved to be mountains on the main land: steered then for a junk at anchor, and soon came in sight of the following place. Ping-hu-heen.

Cha-poo, lat. 30° 37′ N., lon. 121° 8′ E., on the north coast of Che-keang Province and Hang-chow-foo Bay, has a tolerable harbour, and the imperial trade with Japan is carried on from hence. The Sylph anchored about half a mile off the town in 4½ fathoms, and had only 12 feet at low water, the vessel then striking the ground. At the beginning of the flood she floated, and had 6 fathoms at high water. The rise and fall of tide here was 24 feet; whereas at Woo-sung, not far distant, it was only 8 or 9 feet on the springs. The town of Cha-poo is thought to be about 5 miles in circuit, of square form, intersected by numerous canals, which communicate with Hang-chow-foo River. The country is beautiful and picturesque, and, as far as the eye can range, is interspersed with towering pagodas, romantic mausoleums, and numerous temples. The country round Hang-chow-foo and Cha-poo may be considered the Chinese Arcadia; the scenery is embellished with canals, neat roads, plantations, and conspicuous buildings. The Imperial Canal and the Tae-hou or Great Lake being at a short distance, render this locality much celebrated for commerce, wealth, and a dense population. The Sylph nowhere on the coast found so many intelligent inquirers and so much kindness as at Cha-poo. Cha-poo.

The country about Cha-poo is hilly, with undulating ridges, continuing so for a great distance to the southward; but the whole coast from hence northward, till beyond the Yellow River, is very low and flat, scarcely visible until almost close to the land.

Hang-chow-foo, in about lat. 30° 30′ N., lon. 120° 32′ E., the capital of the province of Che-keang, is about 7 leagues inland from the entrance of the river, at the head of the bay of Hang-chow-foo, which, although navigable up to the city, is unknown to Hang-chow-foo.

Europeans. But it is said to be one of the richest and finest places of the empire: the staple articles are raw silk and green teas.

THE YANG-TSZE-KEANG is the largest of the Chinese rivers, and leads to the city of Nan-King, or South Capital, which is in about lat. 32° 5′ N., lon. 119° 0′ E., 50 or 52 leagues from the entrance of the river.

The entrance of the Yang-tsze-keang is very wide, and is divided into two channels by the large Island of Tsung-ming; there are many smaller islands in and off the entrance, which are a continuation of the northern islands of the Chusan group.

Sha-wei-shan. Sha-wei-shan, in lat. 31° 16′ N., lon. 121° 56′ E.,* a small peaked island, distant about 7½ leagues nearly North from North-west Island, is the northernmost of the Chusan Archipelago, but far detached from the others; it is a mark for proceeding towards Woo-sung River, as it fronts the entrance of the channel, formed by the Island Tsung-ming on the North, and the low coast of Shang-hae to the South, leading to the river.

Amherst Rocks. The AMHERST ROCKS, a dangerous ledge, in lat. 31° 10′ N., lie about 3½ or 4 leagues to the South-east of Sha-wei-shan, on the south side of which the Amherst passed to seaward, in sight of the North Island of the group to the S. S.W., and Saddle Island to the S. Eastward, which lies nearly 8 leagues East of North Island. The bottom is even but shoal over the flats of Shang-hae, when inside of Sha-wei-shan and the ledge of rocks mentioned; the depths being usually from 5 to 3¼ or 3 fathoms at low water, excepting where there are sand-banks; and the low flat alluvial coast is just visible from the mast-head when in 4½ or 4 fathoms.

Directions. A ship approaching Shang-hae Channel from seaward should steer West on the parallel of Sha-wei-shan, if the wind be northerly, to make that little island, and pass to the southward of it and Amherst Rocks, as the ground to the northward has not been explored. But if the wind be southerly, steer West on the parallel of 30° 56′ N. or 31° N., to make Saddle Island, and having passed about mid-channel between it and Amherst Rocks, steer about W. N. W. to get a sight of the low coast, which will probably be first indicated by a grove of trees near the shore; afterwards steer along the edge of the coast bank to the N. Westward through the channel of Shang-hae to the entrance of Woo-sung River.

A ship approaching from southward by the inner passage to the westward of Chusan Archipelago, after having got through the channel between the eastern part of the low land of Shang-hae, and N. W. and North Islands, and being to the northward of the latter, should steer about N.W. by N., in soundings of 4½ to 4 fathoms, which will deepen to 5, 6, or 7 fathoms, when advanced into Shang-hae Channel, and she may anchor in 5½ or 6 fathoms off the mouth of Woo-sung River.

Woo-sung. Woo-sung village, in lat. 31° 26′ N., lon. 120° 48′ E., stands a little inside the entrance of the river of that name, called also Shang-hae River, the great commercial City Shang-hae being situated about 6 leagues inland on its left bank, which is one of the most active trading cities in the empire, several hundreds of junks usually lying close to the wharfs, or moored opposite, where the depths are from 6 to 8 fathoms, and the river nearly half a mile wide; but ships of large draught of water cannot proceed up to the city. On each of the points at the entrance of the river there is a fort, about 1½ miles below Woo-sung village; the bar is a little outside the north fort, having about 4 fathoms on it at low water, for a space of about a quarter of a mile, and the channel over it is bounded by shoal banks. Captain Rees describes the passage to be safe,

* Captain Anson, of H. M. S. Pylades, made this island in lon. 122° 5′ E.

by bringing the north fort to bear W. 26° S.,* then steer direct for it, and as the north bank of the river, close to the fort, is approached, the water will deepen from 4 to 6, then to 10 or 11 fathoms, and gradually shoal again to 7 and 6 fathoms near the village of Woo-sung.

Tsung-ming, S. E. point, is in about lat. 31° 32′ N., lon. 121° 41′ E., and from Woo-sung River, the nearest part of the island is distant about 5 leagues in a north-east direction, having extensive shoal banks, and flat half submerged islands between them, and round Tsung-ming. This island is now said to be about 20 leagues in length, and 5 or 6 in breadth, being the largest alluvial island in the world, containing at this time about half a million of people, although in the 14th century it did not exist above water, so as to be habitable. The great quantity of soil discharged by the Yang-tsze-keang must continue to transmute the shoals into alluvial islands; these indeed are forming off its entrance in the neighbourhood of Tsung-ming. The water issuing from that great river is sometimes found quite fresh when the land is not discernible. Tsung-ming.

The Sylph's journal of the 21st December, 1832, has the following remark. "Went into the river, passed Woo-sung, and anchored well within the latter place; afterwards moved about 1½ miles farther up, being then within 5 miles of the great trading city of Shang-hae, where a forest of junk masts appeared, there being above 2,000 vessels at anchor here."

The following notes on the entrance of the Yang-tsze-keang are by Captain C. R. Drinkwater Bethune, of H.M.S. Conway, who visited it while attached to the fleet in 1840.†

"The limits of the embouchure of the Yang-tsze-keang are not well defined, but are included between the parallels of 31° 0′ and 32° 10′ N. lat.; it is divided into various channels by low islands, which have been doubtless formed by deposit from the river, and reclaimed by the industry of the people. Both the islands and the banks of the river are very low, and are defended by dykes: however, during the period of our visit (August and September), no traces of inundation were visible. The largest among the islands is Tsung-ming: it lies W. N.W. and E. S. E., and is about 30 miles in length, 6 in breadth at the eastern extremity, and 9 at the western. In the parallel of Tsung-ming, the shoal extends 15 miles to seaward. Twenty miles East from Tsung-ming lies an island, Shawaishan (Jaunay Island of the Amherst voyage), 196 feet in height; lat. 31° 25′ 2″ N., lon. 122° 6′ E. From the summit Tsung-ming is just visible. Saddle Island of Amherst is also visible, bearing S. E. by S. distant 42 miles, and the *dangerous* rocks bearing S. S. E. ½ E. 16 miles. To the northward of Tsung-ming there are several channels with deep water; some run up for 8 or 10 miles, and are then barred by an islet or bank; others may perhaps lead up, but the approaches are dangerous or shallow, so that they cannot be recommended for vessels. They have not therefore been examined so much in detail as that lying South of Tsung-ming, and running on the right bank of the river. This channel the Amherst ascended when she visited Shang-hai, and it is the only one that can be recommended for vessels of any burthen. An extensive flat lies at the entrance, over which you carry from 3 to 4 fathoms: with the information I now possess I should have no scruple to take 21 feet over, and think I may venture to say, future examination will shew that a 4 fathom Captain Bethune's notes on the Yang-tsze-keang.

* In the narrative of the Amherst's voyage, it is marked S. 26° W., as the proper bearing, which is evidently a mistake, as that would lead directly on the north sand or shoal; and W. 26° S. is the bearing for crossing the bar in the M.S. plan of the entrance of the river by Captain Rees, given in my Chart of the Eastern Coast of China.

† A survey of the entrance of Yang-tsze-keang was at this time made by Mr. George Johnson, Master of H. M. S. Conway, and is now published by the Admiralty.

channel exists. When over the flat, a deep water channel, not intricate, leads up 80 miles from the entrance, the highest point reached by the Conway."

"We only stopped here, having attained, as was thought, the point named in the instructions, as to all appearance the deep water still continued. Up to this point the banks had presented one uniform flat, rarely broken by trees; but here, the country assumes a new character, three hills, about 300 or 400 feet high, appearing on the left bank, about 4 or 5 miles from the river; on the summit of one of which was a tower, and apparently a large establishment of priests (Tong-Chow). On the right bank the country was also becoming hilly, some hills approaching near the river. No large towns were visible, but many villages. The banks are intersected by numerous creeks, in almost all of which there appeared to be junks with many people, but the greatest number of people were observed on the left bank for 5 or 6 miles below the three hills mentioned above."

Tides and winds.

"The remarks on the tides and winds depend on observations made from the ship, and from her change of position they are rendered in some measure uncertain (period, August and September)."

"Generally off the mouth of the river, high water at full and change about noon; rise at springs 15 feet, neaps 10 feet: once 18 feet was noted, but I judged it was exaggerated. The stream of flood comes from the eastward, drawing to the southward about the last quarter, and round to the ebb from the westward, and so round by northward. The greatest velocity measured was $4\frac{1}{2}$ knots off the northern entrances, but the usual velocity at springs is about $3\frac{1}{2}$."

"In the river off Woo-sung, high water, full and change, about 1h. 30m.; rise uncertain, but from 15 to 18 feet. Stream of flood comes from S. E. round by East to North; ebb from N.W. round by North. At the furthest point reached, high water about 4h. 30m., rise 14 feet, ebb runs 8 hours. Flood at the neaps scarcely perceptible."

"July.—Bar. 29·74, ther. 78; prevailing winds south-easterly, freshing about the change of the moon."

"August.—Bar. 29·78, ther. 78; prevailing winds south-easterly and northerly, a day or two blowing weather at the change, with a little rain."

"September.—Bar. 29·90, ther. 77; winds more variable, but drawing round from south-easterly to northerly. Blowing weather at full and change, with rain; morning much colder than average. The temperature, having been taken on the main-deck, is not very correct. The periodical breezes at full and change appear to increase intensely. Barometer rises with northerly winds, and falls with westerly and southerly winds. One hard blowing day, with barometer at 30·10, as far as we went there are no means of preventing a free passage up the river. At the entrance of the Woo-sung are two forts, bearing N.W. and S. E. from each other, at about three-quarters of a mile apart; but as they appeared to have been newly faced with mats, I presume much confidence is not to be placed in them. In addition, on the left bank is a quay, three miles in length, connected with the fort, defended by a kind of wedge-shaped traverses, about 6 feet high and long, and perhaps 15 feet apart. We could not make out whether they were composed of earth, baskets, or earthen pots; from some being whitened, we at one time imagined they had been erected on the same principle as the mat-forts, to look like tents. There are two batteries along this line—one of about 10 guns, near the western corner of the quay, another of the same number, commanding the entrance; some of the guns appear to be 9 or 12 pounders."

Defences of the river.

"On our return, off the place from the upper part of the river, from 30 to 40 junks were moored abreast across the entrance; we have seen at this place perhaps 300

soldiers. Three foolish guns were fired at the ship from a point 6 miles below the forts."

"Above the point there are no defences, until you arrive at a large village, and establishment for building junks, where a show of about fifty soldiers was made behind a parapet. This was the highest point the Conway reached; and I judge, from the Chinese charts, that it is considered the first defence on the river. As a gun-boat might be placed to enfilade this, it is hardly worth attending to. There is also a circular fort of small dimensions, apparently useless, both for offence and defence; near this fort is a hill, about 200 feet high, with a building on the top, which apparently might be made defensible; describing a semicircle from this point with a radius of 8 miles, several heights will be included, forming, I presume, a position of some value. It is unfortunate that, to the extent of half a mile from the shore, the bank is very flat. Ten miles below this, on the same side, about twenty soldiers appeared in a round fort, with the usual allowance of flags."

"Tents were seen in various places when we remained any time, and a flotilla of boats followed our movements in shore until the last moment, when a couple of shot and a shell shewed them that such attention in future might be attended with danger."

"Cattle and small stock appeared plentiful, particularly on the north side of Tsun-ming. Caution must be observed in foraging, for the country presents singular advantages for defence, the communication being by narrow causeways through the cultivated ground, which again is intersected in all directions by creeks and ditches: this, however, may only be the case near the river." Supplies.

"The water of Woo-sung is perfectly good; we have used it twenty miles lower, but the time of the tide must be attended to, and even then it has a trace of salt."

"All the islands without the river at this time (September) can afford supplies of sweet potatoes."

"I should add, that cattle appear to be kept for agricultural purposes, and it is a question whether they can be easily replaced."

"So far as the islands have fallen under my observation, there is no hidden danger among them, and there is anchorage throughout, with good holding ground. I suspect the west end of Ning-po to be shoal, and passing between the islands lying N.N.E. from King-tang, we passed over $3\frac{1}{2}$ fathoms. As we were not aware of the state of the tides at the time, there may be less at low water. To enter the river, keep Gutzlaff S. S. E. by compass 24 miles, when you will perceive breakers or a ripple on the bank, according to the state of the weather; on this course you will not have less than 4 fathoms, or, at the least, $3\frac{1}{2}$ fathoms. As it is difficult to run a given distance when tide enters into the account, you must be governed by the Island Sha-wai-shen, which, in fine weather, is visible, from a height of 16 feet, 20 miles; just in sight from that height, bearing N.E. by N., you may steer N.W., and from aloft will perceive the low land, and a single tree, sufficiently remarkable, bearing about W.N.W. Steering N.W. you will carry 4 fathoms over the flat, and must keep at least 2 miles from the shore on the larboard hand, as it runs off shoal. When the tree bears South, close the shore to half a mile or one mile, and steer about N.W. by W. for the largest clump of trees you see on the shore. The water will deepen gradually to 9 or 10 fathoms. When abreast of the trees the forts at Woo-sung will be seen, distant about 8 or 9 miles. Good anchorage with the eastern fort S. by W., extremity of Wall N.W. Bush Island is remarkable, and must not be approached nearer than $2\frac{1}{2}$ miles; keeping half a mile

Dangers.

Directions for entering the river.

from the Wall N.W. by W. leads into the deepest water up the river. The soundings decrease gradually from 8 to 4½ fathoms, in the centre of a large bight 2 miles from the shore; and then deepen gradually to 14 fathoms, abreast a clump of trees 17 or 18 miles from Woo-sung. The mark for hauling to the northward is the trees on Mason Island, open to the westward of Tsung-ming, bearing N. ½ W. As you haul across, open the island gradually, and you may keep close to Point Harvey, which is steep to half a mile. From this, steer N.W. ½ W., when, if the weather be clear, a hill and pagoda will be seen a-head. Do not approach Mason Island nearer than 2 miles, and when past it, keep about mid-channel, steering West, taking care not to bring the trees on Mason Island to the southward of East, to avoid a shoal lying one-third the distance across from the north shore. You are abreast of the shoalest part of it when the pagoda bears N.W., and a great bush on the south shore S. ½ W., about 14 miles from the West of Tsung-ming: then steer S.W. by W. ½ W. for Round Tree Point, distant about 4 miles; deep water will be had before and after passing; and when abreast Round Fort in a creek, and 1½ miles off shore from 20 fathoms, you have suddenly 2 fathoms, and then 4 feet. The great bush kept in sight clears it to the northward, and from this W. by N. leads up abreast a village and fortification situated among hilly ground. Up to this point the banks are perfectly flat, and although the trees and bushes spoken of are sufficiently remarkable when recognized, care must be taken not to confound others with them. Here the channel again crosses the river, and is about 1½ miles wide, then about N.N.W. ½ W., deepening from 7 to 12 fathoms."

Hwang-hae.

HWANG-HAE, or the YELLOW SEA, is bounded on the West by the deep bight of the coast, comprehended between the Yang-tsze-keang and the Shan-tung promontory, and on the East by the coast of Corea; it is mostly muddy, and of a yellow colour near the land. It has been little frequented by European ships, nor has any part of the coast been explored between the Island Tsung-ming and the Shan-Tung promontory, although it is known to contain several excellent harbours, and to possess an extensive coasting trade. The following are a few of the best known points of the coast.

Hwang-ho.

HWANG-HO, or YELLOW RIVER, the entrance in about lat. 34° 2′ N., lon. 119° 51′ E., is almost unknown to Europeans; it is considered to be little inferior to the Yang-tsze-keang in magnitude. The whole of the low coast between these great rivers is fronted by extensive flats and shoal banks, projecting in some places above 20 leagues from the land, rendering the approach dangerous for large ships until better known, although there may probably be channels among these shoal banks in the neighbourhood of the coast frequented by the native trading vessels.

Keaou-chow-foo.

KEAOU-CHOW-FOO, or GLUE CITY, in about lat. 36° 15′ N., lon. 120° 25′ E., situated at the head of a fine deep bay at the N.W. part, and bounded by a peninsula on the eastern side, has a spacious harbour, and is the principal emporium of the province of Shan-tang.

Teih-mei-heen.

TEIH-MEI-HEEN, or BLACK INK CITY, about 8 leagues to the eastward, on the bank of a river, which runs into the N. E. branch of the same bay, is said also to be a place of considerable trade.

URH-TAOU, or EAR ISLAND, also called Staunton Island, in lat. 36° 47′ N., lon. 122° 16′ E., is of middling height, and lies near the south point of the peninsula of Shan-tung. Close under the promontory of Shan-tung, in about lat. 37° 23′ N., lies Sang-kow Bay, having in it the Island Le-taou, where the coasting junks anchor, and there is said to be a spacious and deep harbour, surrounded by rocks, with great shoals on the left side of the entrance. Another large harbour, called Toa-sik-tow, or Ta-shih-taou, frequented by the Chinese vessels, is said to be near the above-mentioned promontory. Urh-taou.

SHAN-TUNG, SOUTH POINT, is in lat. 37° 0′ N., lon. 122° 41′ E., and there is an island about 4 or 5 miles to the S.W., with rocks between it and the main.

A ship bound to the Gulf of Pe-tche-lee should steer about N. ½ E. and North from the Tchin-shan Islands, until in lat. 33° N., to avoid the shoals off the Yang-tsze-keang, where the depth will decrease to 17 or 18 fathoms, sandy bottom. From hence, the course is about N. by W. to pass mid-way between the coast of China and the S.W. extremity of Corea, into the entrance of the Gulf of Pe-tche-lee; the same course leads directly towards Shan-tung Promontory, in soundings between 20 and 40 fathoms, shoaling to 15 and 12 fathoms, with overfalls near that headland. To sail towards the Yellow Sea.

GULF OF PE-TCHE-LEE.

THE SHAN-TUNG PROMONTORY, in lat. 37° 24′ N., lon. 122° 45′ E.,* the easternmost land of China, is the high extremity of a long peninsula, projecting a great way to the eastward; the point is of moderate height and broken appearance, and may be seen 6 or 8 leagues; it appears to be formed by several small islands, having narrow channels between them. The soundings are 16 and 18 fathoms about 3 leagues from the point, but increasing fast to 30 and 40 fathoms when it is approached within 3 miles. About 2 or 3 miles to the N.W. of the point there is a small but high island, named by Captain Maxwell Alceste Island; it appeared to have a reef extending about half a mile round it, and there are some rocks above water on the reef. To the westward of Alceste Island 7 or 8 miles there is another round island, at some distance from the main land, which here forms a deep curve or bay, and is mountainous. Shan-tung Promontory. Alceste Island.

After rounding Alceste Island, the ships of the embassy steered about W. by N. ½ N. towards the straits of Mia-tau or Mia-tao, formed by the Mai-tau or Black Islands to the southward, and others to the northward. In this route the depth of water was very regular, from 15 to 17 fathoms, on a mud bottom. Chuh-san, or Bamboo Island, the easternmost of the group, is first discerned when approaching the straits; it is high, visible 9 or 10 leagues, and lies in lat. 38° 0¾′ N., and 1° 44′ W. from the point of Shan-tung. Having passed to the southward of Chuh-san and another small island about

* Measured twice from Macao by chronometers by Captain D. Ross, of the Company's surveying ship Discovery, which, with her consort the Investigator, accompanied the embassy under Lord Amherst to Pekin River, in 1816: this description is chiefly taken from Captain Ross's observations.

$2\frac{1}{2}$ miles more westerly, steered to pass between the Keu-san Islands, two small islands at the western entrance of the channel. The Northern Keu-san is very remarkable, being like a gunner's quoin, with the highest part to the southward; it is in lat. 38° 8′ N., lon. 2° $0\frac{3}{4}$′ W. of the point of Shan-tung. The soundings throughout the channel were about 11 fathoms regular, although the Investigator got one or two casts of 6 fathoms on a small knowl.

Wei-hae-wei Harbour.

WEI-HAE-WEI,* or OIE-HAI-OU HARBOUR, the north entrance, is not easily discerned when coming from the westward. The harbour is formed between Leu-cung-tow, a large and high island, and a deep bight of the coast. There are several rocks above water at a short distance to the westward of Leu-cung-tow, between which and the latter is the best channel into the harbour, and it is a mile wide: no danger is to be apprehended in the channel but what is visible. The soundings in the entrance are from 10 to 12 fathoms, but when abreast a small rocky island, near the S.W. part of Leu-cung-tow, the depth increases suddenly to 17 fathoms, and decreases again very rapidly to 5 fathoms; after which, it gradually decreases to the southern shore, and into the bay to the westward where the village is situated. Between the southern part of Leu-cung-tow Island and the main, which is $2\frac{1}{2}$ miles distant, there is a very safe passage, but over part of it there are only $3\frac{1}{2}$ fathoms at low water. A ship of easy draft, about 18 feet, would find the anchorage about half a mile to the southward of Leu-cung-tow tolerably secure; and a large ship, were it necessary, could enter the North Channel, and make choice of a berth of 5 and 6 fathoms in a deep part to the southward of the rocky island, off the S.W. point of Leu-cung-tow; she must anchor close to the land, and in that situation would not feel any swell. The eastern point of Leu-cung-tow is very rocky, and the rocks above water extend a mile off; the distance between the rocks and the main is $2\frac{1}{4}$ miles, but in mid-channel there is a small rock island, encircled with a reef extending a short distance. The Discovery and Investigator turned through the eastern channel, and found it nearly a flat, with $3\frac{1}{4}$ and 4 fathoms at low water, all to the southward of Leu-cung-tow, but the depth increased to 6 and 7 fathoms between the small island and the eastern rocks.

Position.

Observations taken on the small island off the S.W. part of Leu-cung-tow made it in lat. 37° $30\frac{1}{2}$′ N., lon. 122° 10′ 55″ East, or 34 miles West of the point of Shan-tung. From the small island in the eastern passage, Alceste Island was seen bearing S. 84° E., distant about 25 miles, and the other island about 7 miles to the westward of Alceste Island bore S. $81\frac{1}{2}$° E. From the first anchorage in the harbour in 5 fathoms, the northern passage rock bore N. $38\frac{1}{2}$° E., the fort at the eastern part of the village N. $73\frac{1}{4}$° W., the small island to the S.W. of Leu-cung-tow about E. by S., distant one-third of a mile. In this situation a ship is exposed to the swell from N. E. by N. to E. N. E., but is otherwise sheltered by the land. Fresh water may be had at a sandy beach on the main, nearly south from the anchorage.

The coast between the Shan-tung Promontory and Wei-hae-wei Harbour appeared to form a deep bight, and the land is high: sailed from the harbour at night, and made nearly an east course in regular soundings from 12 to 15 fathoms, until past the Promontory point. From the 25th July, the day on which the embassy rounded the Shantung Promontory, until the 3rd September, when the Discovery quitted it, no severe

Winds in the Yellow Sea.

weather was experienced; the few fresh breezes were of short duration;† it seems

* Defence, escort, or protection.

† In some seasons it has nevertheless been found, that the Yellow Sea and the Gulf of Tartary, formed between Japan Islands and the continent, are liable to thick fogs during the South-west Monsoon; and in the North-east Monsoon there is much stormy weather in those seas.

probable, that ships may remain at anchor off the Pei-ho a considerable time, as, from the number of trading vessels seen moving in all directions, the navigation of the Yellow Sea appears to be during the summer months. The inhabitants at the different ports were civil, and thronged in great numbers on board to see the ships; they appeared to possess more honesty than the Chinese about Macao and Canton. There did not seem to be a scarcity of cattle, although, with the exception of a few sent off at the Pei-ho, none could be procured for the crew. It is therefore advisable for ships not to depend on getting supplies in the Yellow Sea.*

CHE-FOW-TAOU, or ZEU-OO-TAU CAPE, on the north coast of Shan-tung, in lat. 37° 35′ 50″ N., lon. 121° 28′ 10″ E., or 76½ miles West of the Shan-tung Promontory, is a high, bold cape, and when seen at a distance appears like an island. To the southward of this cape lies Che-fow-taou Harbour, called also KI-SAN-SEU BAY, which the ships of the embassy visited to procure water. The anchorage is exposed to the wind and sea from N. E., but is partly sheltered to the eastward by a group of small islands and rocks, between the western one of which and Cape Che-fow-taou, the passage is 1½ miles wide, through which ships must pass when entering from the northward: the soundings in this channel are 11 and 12 fathoms, decreasing to 4 and 4½ fathoms at the anchorage. There is a village on the south side the cape, about a quarter of a mile from the point, defended by a fort on an elevated situation: at this village there are two wells of water; that nearest the beach was used by the ships, and found brackish; the other, being better, was kept by the inhabitants for their own use. A little fruit was got here, but no cattle could be obtained for the ships.

Che-fow-taou.

Ki-san-seu Bay.

CUNG-CUNG-TAOU GROUP: the northern island or rock bears from Che-fow-taou N. 82° E., distant 7½ miles, and the south-east island bears from the northern one S. 34½° W., distant 4¼ miles. The passage between these islands and the coast of Shan-tung, in the narrowest part, is 2½ miles wide, and the depth 5 and 6 fathoms. If a ship pass through it in the night, she must be careful of two little sand-banks, one of which is near the southern point of the large island, and the other about one mile farther to the N.W.: the channel between the northern island and the next was not examined, but junks were seen passing through. The variation of the needle in 1816 was 1° 50′ W.; the tide rises 7 feet, high water about 8 hours, at full and change of moon.

Cung-cung-taou Group.

TANG-CHOW-FOO, or TEN-CHOO-FOO, in lat. 37° 48′ N., lon. 120° 52′ E., bears about W. 20° N. from Che-fow-taou, distant 12 leagues; the coast between them contains some deep bays, and may be approached to 9 or 10 fathoms; the water is not so deep here as it is farther to the eastward.

Tang-chow-foo.

The anchorage at Tang-chow-foo is not good, the bottom being rocky; it is open to

* Millet appeared to be the principal grain cultivated along the North coast of Shan-tung, and appeared to furnish the diet of the people who came under observation; the hills shewed the same barren appearance near the sea, as may be observed along the whole south coast of China; and there was a most marked difference in the dress and apparent comforts between the people on the shores of the Yellow Sea and those inhabiting the provinces of Canton, the latter having much the advantage of the former. Only one war boat was seen while in the Yellow Sea, by which it would seem that about Canton and its vicinity the greatest part of His Imperial Majesty's naval force is stationed; which, with their forts, are but poorly calculated to resist European forces. Many of the forts are quite destitute of cannon, and in such as have, the guns are so bad as to endanger those who fire them.

the eastward and westward, and the Meih-taou Islands are too far distant to afford much shelter from either the wind or swell which comes from the northward. There is a dock or basin at the city for vessels to load or unload, its entrance, from 30 to 40 feet wide, formed between two piers. A dangerous reef, about $1\frac{1}{4}$ miles off shore, extends East and West nearly a mile, covered at high water, and being steep to, the soundings do not mark its proximity. Tides. The tides rise and fall about 7 feet on the springs, the flood running East and the ebb West, contrary to what might have been expected; this is probably the effect of the water from the Yellow Sea, flowing between Shan-tung Promontory and Corea, into the gulf, and being repelled from the Lea-tong coast westward, around the circular shores of the Gulf of Pe-tche-lee, has, when it reaches Tang-chow-foo, sufficient strength to resist and overcome the feeble efforts of the eddy tide setting round Shan-tung Promontory to the westward.

MEIH-TAOU GROUP, already mentioned, lies to the northward of Tang-chow-foo, and the strait by which they are separated has irregular soundings, between $5\frac{1}{2}$ and 6, to 14 fathoms water. A reef projects from the S. Easternmost Meih-taou; and from the point of land on the west side of Tang-chow-foo, a sand-bank stretches some distance to the westward. From hence to Sha-loo-poo-tien Islands, the depths are 13 to 15 fathoms in the fair track, steering up the Gulf of Pe-tche-lee.

The Discovery, in leaving the gulf, passed to the southward of the Cung-cung-taou Islands, and steered eastward along shore to a projecting point of land, having an island a short distance to the northward, which island is in lat. 37° $34\frac{1}{2}'$ N., and 41 miles to the westward of the north-east point of Shan-tung. A rock and small reef projects off the north point of the island, which was passed about $1\frac{1}{2}$ miles distant, in 14 fathoms water. The coast between Ki-san-seu and this point curves in to the southward, but no port for shipping was observed: regular tides were experienced along the coast.

From Tang-chow-foo, the coast takes a W. S.W. direction for 25 miles, to a projecting point, on which stands a village; it then runs due South, curving gradually round to the westward, and forming the southernmost shore of the gulf.

Lae-chow-foo LAE-CHOW-FOO, or EDIBLE PLANT CITY, in lat. 37° 13′ N., lon. 119° 50′ E., lying at the southern part of the Gulf of Pe-tche-lee, on the eastern point of the mouth of its contiguous river, has a fort and high craggy cliffs a little to the eastward, with some islands from 2 to 4 leagues off shore, nearly fronting the city in a northerly direction, one of which resembles a quoin and the other a saddle. This seems to be a place of considerable coasting trade, but the water is shoal along the shore in this part of the gulf, there being only $4\frac{1}{2}$ or 5 fathoms, about 4 or 5 miles off the entrance of the river, near to the westernmost islands; and there are several rocky patches, with $2\frac{1}{2}$ or 3 fathoms water on them, to the northward and N. Eastward, 4 or 5 leagues off the coast, with 6 and 8 fathoms near them. The coast from Lae-chow runs westerly, and then north-westerly towards the mouth of Pei-ho river; the shore in the interval is unexplored, but is represented to be low and flat, with shoal water extending a long way out from the land.

Pei-ho. PEI-HO* anchorage bears N. 70° W., distant 140 miles, from Keu-san Islands, and the bottom is so flat, that the soundings only varied from 12 to 14 fathoms through-

* White River; *Pei,* Pih, or Pe, signifying White, and *Ho* a River. Keang, or Kiang, is also a River.

out this distance. The Discovery at anchor in $4\frac{1}{2}$ fathoms at low water, made the lat. 38° $58\frac{3}{4}$′ N., lon. 118° 0′ E.,* or 4° 45′ W. from the Shan-tung Promontory, the entrance of the river being about 9 miles West from the ship. No other object was visible than a temple, which stands on elevated ground about 3 or 4 miles within the river, and a little low land, seen from the mast-head to the N.W. About 3 miles to the westward of the anchorage the depth was only 2 fathoms; and the whole space from thence to the shore appeared to be very shoal, only admitting a passage for boats, excepting at high water, small-sized junks were seen entering, apparently not without difficulty. The ground about the anchorage is soft whitish mud, and holds well. During 14 days at anchor, the weather was fine, and the wind variable; excepting two gales of short duration, experienced from N. E. The rise of tide was 7 feet, the flood from the S. S. E. and the ebb from the N.W., but the direction of the former seemed to be influenced by the winds;† its velocity on the springs was about one knot per hour, high water at full moon about 9 or 10 hours. Variation of the needle observed 2° 30′ westerly. Anchorage.

On the south side the entrance into Pei-ho there is a military station, and a platform or tower for its defence. Here, the width of the river does not exceed half a mile, decreasing to less than a quarter of a mile abreast of Ta-koo village, which is about four miles up, and where the embassy of 1816 embarked on board the Chinese yachts.

Peking. Peking, or Pekin,‡ in lat. 39° 54′ N., lon. 116° 32′ E., by observations made during the late embassies to that metropolis of the empire of China, is about 38 or 40 leagues inland, to the N. Westward from the entrance of the Pei-ho; and Tong-chow-foo, or city of approach, which may be considered as the harbour of the imperial city, is about $4\frac{1}{2}$ or 5 leagues eastward of Peking.

Teen-tsing-foo. Teen-tsing-foo, or Tien-tsing, a city of great trade, particularly in salt, stands at the junction of the Eu-ho, or Yun-liang-ho, with the Pei-ho, about 11 leagues distant in a W.N.W. direction from the entrance of the latter in a *direct line;* but this river, in the intervening space, having several lateral windings, the distance is thereby increased twofold, or to about 20 leagues by water. There are extensive salt magazines contiguous to the lower part of this city, where the river is crowded with junks from various parts of the empire; and along the banks of the river downward to the village Ta-koo, or Great Mouth, are stacks or deposits of salt, which, in preparing and transporting, gives employment to thousands of people in this low, flat, dreary part of the coast, and is a source of wealth to many of the traders.

Tides. The tide at the entrance of the Pei-ho is subject to great irregularities, the stream in the river usually having a motion more or less towards the sea, except when the prevalence of strong southerly winds swells the Gulf of Pe-tche-lee, and thereby augments the depth of water in all the circumjacent rivers equally with the Pei-ho.

In 1793, when Peking was visited by the English ambassador,§ a bar was found to extend in a N.N.E. and S.S.W. direction at the mouth of this river, having only 3 or 4 feet on it at low water, and in several places almost dry. In July the tide rose and fell 6 or 7 feet with full moon, high water at $3\frac{1}{2}$ hours. At this time, about 5 or 6 miles

* The anchorage of His Majesty's ship Lion, and Hindoostan, with the former embassy, was in lat. 38° 51′ N., lon. 118° 2′ E., by lunar observations.

† A strong north-west wind drives the water out of the Gulf of Pe-tche-lee, reducing the depth several feet along the circumjacent coasts; but a southerly wind forces the water into it, between Corea and Shan-tung, thereby augmenting the depth considerably all over this shoal gulf, which is gradually subject to a decrease in the depth of water, occasioned by the accumulation of soil, deposited by the Pei-ho, and other rivers.

‡ Or North Capital: called also, Shun-Teen-Foo, or Fair Celestial City. § Lord Macartney.

outside the mouth of the river, there was fixed a large bamboo beacon, with small ones continued from it in a direct line to the shore, as a guide for entering the river, by keeping the line of beacons close a-board on the left hand or larboard side. The course W. by N. leads into the best channel, in a line with the fort on the S.W. side the entrance of the river, which within the bar is one-third of a mile wide, with about $2\frac{1}{2}$ or 3 fathoms at low water.

Shoal of two fathoms.

Ships bound to the anchorage off the Pei-ho should not exceed lat. 38° 55′ N., until the soundings decrease to 7 or 8 fathoms, as a small shoal of 2 fathoms lies nearly East from the anchorage, on which the depth decreased rapidly from 7 to $2\frac{1}{4}$ fathoms, where the Discovery tacked; this shoal spot is in lat. 38° 59′ N. *by account*, and 16 miles eastward of the anchorage, supposed to be one of the shoals, extending off the western part of the Sha-loo-poo-tien Islands, although land was not visible from the mast-head, when at anchor close to the shoal.

SHA-LOO-POO-TIEN, or SHA-LUY-POO-TIEN ISLANDS, signifying Thunder and Lightning Sands, distant from Tang-chow-foo about 40 leagues N.W. by W. $\frac{1}{4}$ W., are a considerable group of low sand isles, extending in an easterly and westerly direction, with shoals among them. From abreast the south side of these islands, the depths decrease gradually to 7 or 6 and 5 fathoms, mud, about 5 leagues to the W. S. Westward, which is the anchorage off the mouth of Pei-ho, or Peking River.

During the recent hostile operations against the Chinese, a squadron of H.M. ships visited the Gulf of Pe-tche-lee, and anchored off the Pei-ho River, and in other parts of the gulf. The following remarks are gathered from the journal and chart of Mr. George Norsworthy, master of H.M.S. Pylades.

Mr. Norsworthy's remarks.

" After rounding Alceste Island, steered for the Gulf of Pe-tche-lee; passed on the west side of Chushan Rock at about a mile distance; this rock has a white shingly beach round it, and appears bold. Entered the gulf between the Quoin (called Kao-shan, in the Admiralty chart) and the islands to the southward, having 12 and 13 fathoms, and no appearance of shoal water. The fishermen say that there are no hidden dangers in any of the passages between the Leo-tung Promontory and the Meih-shan Islands, except the rock on which, with any swell, the sea breaks, and which lies mid-way between Yaskaie (To-ki) Island and the two islands about 8 miles to the northward. From the Quoin to the anchorage off the Pei-ho the course is W.N.W. 46 leagues, with regular soundings of 12 and 14 fathoms. With a strong S.E. wind caution is necessary, lest a vessel be driven too near the Sha-loo-poo-tien banks, which are connected with a group of small islands, and which extend about 8 leagues in a W.N.W. direction from Sha-loo-poo-tien Island, in lat. 38° 53′ N., lon. 118° 45′ E. (by Admiralty chart, lat. 38° 55′ N., lon. 118° 39′ E.). The south-western part of the bank is very steep, the Pylades having shoaled from 10 to 8, 6, and 3 fathoms, rocky and shingly bottom. There are several channels through the sands, which are frequented by the junks, and there are fishing stakes in various parts; the sands in some places dry at low water. At the western end the shoals trend to the northward and N. N. Eastward about 4 miles, and there is a passage for the trading junks between the Sha-loo-poo-tien banks and the shoals of the coast to the northward. The Pylades found good anchorage with smooth water in lat. 39° 2′ N. off the western end of the banks, particularly in N. E. gales, when the anchorage off the Pei-ho is much exposed."

" In running for the anchorage off the Pei-ho, having sighted Sha-loo-poo-tien Island, which is low, with a remarkable joss-house on it, do not come to the northward of lat.

38° 54′ N., on which parallel you will, when past the island, soon deepen to 12 fathoms, and will carry that depth until the west end of the shoals bears North, when the soundings will decrease towards Pei-ho to 8 and 7 fathoms, when you may either haul up for the anchorage off that place, or proceed farther North to the anchorage before mentioned, under the west end of the shoals. At the anchorage off Pei-ho, the flood-tide sets to the N.W. and the ebb to the S.E.; near the shoals the stream takes a W.N.W. direction along its edge. Its rate is between 3 and 4 miles an hour at the springs. High water on full and change of the moon at 10h. 45m."

LEA-TONG, or LEAOU-TUNG GULF, was partly navigated by the Discovery, in company with H. M. S. Alceste, which ships left the anchorage off the Pei-ho August 11th, and passed the Sha-loo-poo-tien Islands at night, without being able to make any observation on their situation, further than that the depth increased to 18 and 20 fathoms at a short distance to the southward of them, and was very irregular; but after passing them, it became again regular at 14 and 15 fathoms. August 13th, at noon, were in lat. 39° 10′ N., lon. 119° 22′ E., in 12 fathoms water, the western part of the high land on the coast of China then bearing N. 18½° W., distant about 11 or 12 leagues. On the 14th, when in lat. 39° 40½′ N., lon. 120° 14′ E., in 15 fathoms water, the TOWERS on the GREAT WALL OF CHINA, near the water side, were seen bearing N. 27¾° W., distant about 8 or 9 leagues: steered to the eastward in regular soundings of 15 and 16 fathoms on a mud bottom, until August 16th, then anchored on the eastern side the Gulf of Lea-tong, to the southward of a projecting point of land, which appeared to be part of an island. About a mile to the eastward of the point, observed on shore with an artificial horizon twice, and made the lat. 39° 31′ 35″ N., and 3° 19½′ E. from the Pei-ho anchorage, or in lon. 121° 19½′ E. The land here is high, and may be seen 7 or 8 leagues distant; got water easily from the second stony beach to the eastward of the point; but the Alceste filled water farther to the eastward, where there was a better stream, although, on account of a flat, not so easily obtained. There is another point of land, about 10 miles S. by E. of the former, and between the two it curves to the eastward, forming a bay. When coming to this anchorage, the depth continued very regular until passing the first point about a mile, when it began to decrease fast, so that 2 miles within it there are but 3 fathoms water. When at anchor in 5 fathoms, the north point of the bay bore N. 38° W., the southern point bore S. 3¾° W., a remarkable red hummock N. 88° E., a village N. 68° E., distant about 1 mile off the nearest shore to the northward. Observations, taken carefully on shore with a large theodolite, made the variation of the needle 1° 56′ W. Whilst at anchor here, numerous vessels were seen passing to and from the northward, many of which appeared deeply laden. The inhabitants were civil, but from their being totally ignorant of the value of dollars, the ships were unable to procure any refreshments. From the summit of a hill extensive lakes to the eastward were discerned, by which it seems probable that the whole of this part of the coast is composed of numerous islands; and to the northward of the one under which the ships anchored, the Gulf of Lea-tong trends very much to the eastward. August 19th, at daylight, weighed and steered to the southward, carrying good soundings from 8 to 10 fathoms, and passed the southern point of the bay about 2 miles off. At noon, by account, when in lat. 39° 3′ N., lon. 121° 5′ E., in 15 fathoms, two islands were seen of moderate height; one of them bore S. 55½° E., distant 9 miles, the other S. 32° E., distant 8 miles; and another high island, distant 12 miles, bore S. 23° W.; 6 miles to the S. S. E. of this, there was another island, of rocky appearance, *by account*, in lat. 38° 47′ E., lon. 131° 4′ E. Passed to the westward of all these islands, and had good

Lea-tong Gulf.

Great Wall of China.

Watering Bay.

Islands near Watering Bay.

soundings in 15 and 16 fathoms, over a mud bottom; the bearings of the three first mentioned were taken from the northernmost point of the Watering Bay, but the weather being thick and rainy at passing them, could place their latitude only by account. After passing the south point of Watering Bay, the land appeared high, and trended off to the eastward, forming a considerable curve, and again stretched to the south-westward: proceeded to the southward of the rocky island, and steered to the eastward for a part of the land which appeared to be near the south point of Lea-tong, and anchored about an hour in 20 fathoms water, off a small bay in which there is a village, and the country round has the appearance of high cultivation. When at anchor, the extremes of land, supposed to be the main land, bore from N. 8° W., distant about 6 miles, to S. 9° E., distant about 2 miles; the two southernmost of the islands which had been passed in running in bore respectively N. 30° W. and N. 36½° W. The northern islands of the chain which extends to the northward of the Meih-taou bore S. 22½° W., distant about 7 or 8 leagues; the anchorage, by account, in lat. 38° 43′ N., lon. 121° 8′ E. This position is on the western side of the south point of Lea-tong, distant from it 3 or 4 miles; but the rapidity of the movements of the ships prevented the position of the south point of Lea-tong from being fixed with great precision. After weighing, steered along the land at about 2 miles' distance, until it was ascertained that it was really the southern extreme of the coast; then directed the course to the S.S.W., until about 10 P.M., when the Alceste anchored in about 30 fathoms water for the night. On the following morning, passed to the eastward of the northern islands of the Meih-taou chain. The channel between them and Lea-tong Point is 7 or 8 leagues wide, and the northern group is in lat. 38° 23′ N., *by account*, lon. about 120° 58′ E.

South point of Lea-tong.

Northern Meih-taou Islands.

The Sylph visited the Gulf of Lea-tong late in November, 1832, and could not dispose of a single chest of opium, owing chiefly to the poverty of the natives, mostly Tartar fishermen, and the severity of the weather, the thermometer ranging between 18° and 23° in the beginning of December; some of the Lascars perished with the cold.

Kae-chow-foo.

KAE-CHOW-FOO, in about lat. 40° 30′ N., lon. 122° 25′ E., at the eastern part of this gulf, about 10 miles inland, is surrounded by a high wall; the houses are low and ill built, but thickly inhabited, and it has an extensive trade. The Sylph was obliged to anchor here at a great distance from the land, there being only 2½ fathoms water about 6 miles off, so flat is this part of the gulf. Not being able to communicate with the shore, which was fronted with ice, and having no shelter from strong north winds, this vessel proceeded from hence towards Kin-chow-foo, in about lat. 41° 8′ N., lon. 121° 10′ E., a place of considerable trade, about 20 miles inland on the bank of a river that falls into the northern part of the gulf, where, it is said, vessels may anchor in lat. 40° 37′ N., about 6 miles off shore. There are several dangerous shoals in the upper part of the Gulf of Lea-tong; for the Sylph, after weighing from the coast at Kae-chow-foo, deepened gradually to 4, 5, and 6 fathoms, then grounded on a shoal in lat. 40° 34′ N., lon. 121° 48′ E., about 8 leagues from the land, and narrowly escaped being wrecked, the vessel striking hard for a considerable time, until the wind changed from the north-eastward to the southward, which raised the water in the gulf and floated her clear of the shoal. Soon afterwards the north wind returned with intense cold, which congealed the spray of the sea into ice as it fell upon the deck, and on the 3rd December, both the inside and outside of the vessel was coated with solid ice; she consequently weighed her anchor with difficulty, and steered southward from this miserable locality: the poor Tartar fishermen were kind and hospitable to the perishing sailors, who, when the vessel lay aground on the shoal, went in the boat through the loose ice

Dangerous shoal.

to the shore, in the hope of obtaining assistance, but they were repulsed by the mandarins.

TUNG-TSZE-KOW BAY, called Watering Bay by Captain Ross, in lat. 39° 29′ N., lon. 121° 20′ E., on the coast of Lea-tong, is several miles in extent, with anchorage from 5 to 7 fathoms under the northern point, where vessels are sheltered from northerly and easterly winds; this bay is frequented by the Chinese junks trading to the ports of Mantchou Tartary, and was visited by the Sylph in 1832, and by H. M. Ships Alceste and Lyra, and the Discovery surveying ship, in 1816. Tung-tsze-kow, or Watering Bay.

Captain Bourchier, of H. M. S. Blonde, thus describes his passage across the gulf. "On the 16th Aug. 1840, got under weigh from Pei-ho for Tung-tsze-kow Bay. At noon on the following day were in lat. 39° 6′ N., lon. 119° 20′ E., the weather cloudy, but the land was seen bearing N. by W. ¼ W., distant from 16 to 18 miles. On the 18th, when in lat., by account, 39° 45′ N., lon. 120° 5′ E., in 8 fathoms, soft mud, although the weather was hazy, the towers on the Great Wall of China were distinctly seen, bearing from N. by W. to North, distant 5 leagues. Steered to the eastward, having regular soundings from 11 to 16 fathoms; but when in lat. 39° 12′ N., lon. 120° 24′ E. by account, suddenly shoaled into 10 fathoms, but soon resumed the former soundings of 16 fathoms, and continued that depth until near the anchorage in Watering Bay." Here several junks were boarded which had coal on board, and, although it was of a poor description, is, according to Capt. Bourchier's opinion, probably abundant on their coast. Captain Bourchier's passage across the gulf.

Capt. Bourchier describes the bay as 7 or 8 miles wide, affording room for any number of ships. The north point, when bearing N. N. E. ½ E., has an abrupt aspect, sloping to the northward and vertical towards the sea, and having a reddish appearance. Between 2 and 3 miles within the point is the watering place, which it is not prudent to approach nearer than 3½ fathoms, at low water. The Blonde anchored in 8½ fathoms, with the north point bearing N. N.W. ¼ W.; Village E. ¼ N.; Remarkable Red Hill E. ½ S.; Watering Place E. by N. ½ N., and South Point S. ¼ W.

There is a bay about 6 or 7 miles to the northward of the south point of Lea-tong, with depths of 24 or 25 fathoms 1½ or 2 miles off shore, having a rocky island fronting its northern extremity. The South Head of Lea-tong appears to be in about lat. 38° 41′ N., lon. 121° 12′ E., but its position was not correctly ascertained. Lea-tong South Head.

THE COREA, or KOREA, called CHAOU SEEN by the natives, is fronted to the West by numerous rocky islands; it was visited, in 1816, by the Alceste, Lyra, and Discovery, after having passed along the coast of Lea-tong; and was again visited by the ship Amherst, in July, 1832; from the journals of these ships, the following brief remarks have been supplied. Corea.

From the South Head of Lea-tong, the coast extends upwards of three degrees in an easterly direction, having many islands fronting it in some parts, but this coast is yet but little known to Europeans. After extending first in a north-easterly, and then in an easterly direction, the coast line takes a south direction, near the meridian of 125° E., forming a great concavity between Lea-tong and the western coast of the Corea.

In September, 1840, H. M.'s ships Blonde and Pylades visited this part of the coast, and determined the position of several points on their route. The following remarks are chiefly from the journal of Mr. Norsworthy, the acting master of the Pylades. "The South Head of Lea-tong," he says, "is a high, bold promontory; with it bearing E. N. E. 15 miles, we anchored in 15 fathoms, mud, the ebb tide setting strong to Mr. Norsworthy's remarks.

the S. E. From this to the Head the water deepened to 20, 25, and 30 fathoms, and when the Head bore N. by W. 6 miles, discoloured water was seen, having the appearance of a long dangerous spit running out from the land to the southward ; three boats were sent to examine it, but after sounding every part, had nothing less than 30 fathoms, off shore from 3 to 5 miles. The coast from the Head trends away to the N. E. by E., and is high and bold, with deep sandy bays, affording shelter for junks with the prevailing northerly wind. Anchored in a bay with the head bearing N. 70 E.* 16 miles, in lat. 38° 48′ N., lon. 121° 34′ E. It is well sheltered from north-westerly and easterly winds, but exposed to the southward and south-westward. From the anchorage, the west point of a rocky island which forms the bay bore S. 71° E., centre of the town N. 56° E., off shore one mile in 16 fathoms : the bottom is irregular, but is good holding ground. Good water may be procured in small quantities N.W. by N. from the anchorage.

Water.

"E. by S. from the bay is a small island, which on this bearing appears round, and much like the Cap in Sunda Strait, but in other directions it resembles a quoin. It appears steep, and has a rock off it to the southward. Passed between it and the coast running along shore to the eastward, having no bottom at 20 fathoms. At the distance of 6 miles E. N. E. from the Cap, passed close to two other islands, one of which resembles a ship under sail. These islands are steep to, having no bottom with 25 fathoms at half a mile distance.

Victoria Bay.

"Anchored in a small bay N. E. by E. 5 or 6 leagues from this Cap : the anchorage is sheltered from S.W. to N.W. winds, but is otherwise exposed. The bay is formed by an island to the southward, and by high, bold land to the northward. Fresh water may be procured, and the natives appeared to be civil. From this bay the coast trended to the N. W. into a deep gulf, with good shelter and excellent anchorage. The distance across the entrance is 13 miles, with two islands lying nearly in mid-channel. They are high, and appear as three islands, one having a neck of sand which is covered at high water. The gulf may be known by these islands, and by a high, black-looking hill on the main. The depth of water in the entrance is 21 and 20 fathoms, but it soon shoals to 10, 9, 8, and 7 fathoms. In running direct for the hill, carried the latter depth to the entrance of a fine harbour, where we anchored in 6½ fathoms. The harbour is formed by numerous islands fronting the main, and appeared capable of containing a large number of ships. Anchored about half a mile from the shore ; but remaining only two hours, had no time to examine the place. Cattle were seen on the hills ; but the natives appeared hostile, coming down in hundreds armed with matchlocks, muskets, &c. This bay was named by Capt. Bourchier, of H. M. S. Blonde, Victoria Bay. Lat. of entrance 38° 56′ N., lon. 121° 50′ E.

"The head of the gulf was examined by the boats of the Pylades, and good anchorage found in 5 and 5½ fathoms, stiff mud. A good mark is a remarkable white, round rock, in one with a conspicuous gap between two hills bearing West.

Rocks.

"There is a dangerous reef of rocks at a considerable distance from the land, of about a mile in extent North and South, and nearly even with the water's edge. The Pylades passed 2 miles to the southward of them, having soundings of 35 fathoms. The weather being squally and rainy, no observation could be obtained ; but the reef was 4 or 5 leagues E. N. E. from the islands at the entrance of the gulf.

"From this danger the Pylades steered E. by S. with a strong S.W. wind, for the south extreme of a group of islands, and found shelter on the east side of an island in lat. 39° 2′ N., lon. 122° 49′ E., in 17 fathoms, mud : the anchorage is sheltered from all but northerly winds.

* This bearing must be erroneous ; it probably means S. 70° W.

"Four miles to the eastward are two islands, lying North and South of each other, having a deep water channel between them. There is a remarkable rock bearing S. S.W. from the south point of the islands, which appear like a junk under sail; it is high, and may be seen 4 or 5 leagues. The Pylades passed inside this rock, and had no bottom with 30 fathoms; from thence she steered N. N. E., and at noon was in lat. 39° 16′ N., lon. 122° 54′ E., in 22 fathoms, the east point of a group of islands bearing N. ½ W. 3 or 4 miles. Proceeded to the northward, and entered an inlet formed by the above-mentioned islands, and others to the eastward, the high coast of the Corea distant 12 miles; shoaled the water to 15 and 9 fathoms; hauled to the eastward and anchored under the last-mentioned group of islands. The southernmost islands of the group are barren, with sharp pointed rocks like the Needles. Observed something like a fort or town on the main, at the distance of 5 leagues, the line of coast trending to the N. E. The flood tide here set very strong to the northward, 3½ miles an hour, and the ebb faintly to the eastward. High water at 8h. 30m. on full and change. Junk Rock.

"In lat. 39° 12′ N., lon. 122° 56′ E., some patches of sand were found, with depths of 15 and 17 fathoms on them, and on which the Pylades anchored for the night; the main land at this time 6 or 7 leagues distant. At noon the next day, in lat. 39° 2′ N., lon. 124° 39′ E., lost sight of the main land at 7 or 8 leagues' distance, the ship in 24 fathoms. There was at this time a patch of low islands in sight, bearing N. by W. 10 miles, and a number of high islands, the eastern extreme of which bore S.E. by E. 16 or 18 miles. After steering S. S. E. from noon, at the rate of 7 knots per hour, at 12h. 50m. the water suddenly shoaled from 15 to 7 fathoms, rocky bottom; she hauled off immediately W. S.W., and soon deepened again to 22 fathoms; altered course again as before, and in a short time again shoaled to 17, 10, 7, 6, and 4 fathoms, when the ship hauled off. From the broken water and the number of birds, it was supposed that there must be much less than 4 fathoms in this shoal; it appeared to extend in a N. N.W. and S. S. E. direction, in lat. 38° 56′ N., lon. 124° 37′ E." Sand patches and islands.

The following is the account from the Remark Book of Captain Bourchier, of H.M.S. Blonde, in company with the Pylades. "Sailed from the anchorage at Pei-ho on the 17th September, 1840, about 8 A.M.; the South Head of Leatong bore N.W. by W. 6 miles, when a shoal was reported from the mast-head bearing North, having the appearance of a long, dangerous spit stretching from the land to the eastward. Sent the Pylades and boats to sound, and although the discoloured water was sounded in all directions, not less than 31 fathoms were found—the change in the colour of the water being occasioned, it is supposed, by the muddy bottom or the meeting of the tides. At noon, lat., by observation, 38° 38′ N., lon. 121° 18′ E., depth 35 fathoms. The short time spent in running through the vast archipelago bounding the south coast of Leatong will prevent my giving more than the position of some of the headlands, &c. Our first anchorage was at 5° 40′ P.M., on the 17th, in 20 fathoms, in a small bight, called, in the chart, Seon-ping-tao, exposed to S.W. winds. Our soundings from noon to the time of anchoring were 38, 33, 32, 27, 25, 20 fathoms, hard ground, and at a distance of 17 miles from the South Head the bearings were as follow: High, steep, rocky cliff N. 62° E.; centre of town N. 42° E.; South Head S. by W.,* sheltered from N. Westerly to Easterly winds: lat., by observation, 38° 46′ N., lon. 121° 37′ E. Three islands lie off the end of this bay, two of them being connected by a spit of sand may be considered as one, though, at a distance, appearing like two. At 1 P.M. weighed, and ran down between the Cap and Quoin Rock; our soundings being 20, Captain Bourchier's remarks.

* This bearing must be erroneous; it may probably mean W. by S.

17, 20 fathoms, anchored in the latter depth with the following bearings: Cap Island S.W. by W. ½ W.; White Rugged Point W. by S. ⅜ S.; Island of San-shan-tow East; lat. of anchorage 38° 52′ N., lon. 121° 53′ E. The outer part of this bay affords shelter from West, N. E., and East winds, but is exposed to S.W. winds. During our stay, obtained some cattle from the large island of San-shan-tow. At daylight on the 21st, weighed, and ran between the north island and the main in 18 to 20 fathoms. At 7, a long and dangerous reef of rocks was observed on the lee bow; at 8, the rocks bore North, the latitude at the time being 38° 56′ N., lon. 122° 15′ E., then 1½ miles from them. These rocks are just above water, and 8 or 9 miles from the main land. The weather becoming thick and squally, prevented any observations at noon, and deprived us of any farther view of the land which appeared to the northward: depth of water 17, 16, 20 fathoms. We now steered for the south extreme of an island E. by S., passing between it and some remarkable rocks, much resembling junks under sail. Anchored under the lee of an island, called Beaufort Island, in 20 fathoms, well sheltered from westerly winds, bearings as follows: island to the eastward East; passages E. N. E. to N. N. E.; village S.W. by S.; rocks N.W. by N.; off shore half a mile. Early on the following morning sent boats to sound passages through; 20, 22, and 23 fathoms were found. From this anchorage weighed at 9 A.M. on the 23rd, taking the north passage. Noon, off the south point of Elliot Group, in lat. 39° 8′ N., lon. 122° 57′ E., soundings 20, 23, and 24 fathoms. Hauled to the northward for a deep bay formed by the numerous islands on the eastern side, soundings decreasing to 18, 12, 10, and 9 fathoms. Hauled out to the eastward, giving a good berth to an island which has several remarkable rocks off its south end, and carrying 18 and 17 fathoms; anchored on its eastern side; lat., by account, 39° 20′ N., lon. 123° 12° E., about 2 miles off shore in 12 fathoms, muddy bottom. This island affords good shelter from N.W. winds. Soon after daylight on the 24th, weighed, and stood to the S. E., carrying until noon 20, 18, 16, and 14 fathoms; anchored in the latter depth for the night. Lat., by account, 39° 16′ N., lon. 124° 11′ E. At 7 A.M. of the 25th, weighed, and stood to the S.E., sounding, till noon, 17, 12, 15, and 19 fathoms; lat., at noon, 39° 1′ N., lon. 124° 39′ E., when, at 1 P.M., shoaled suddenly from 21 to 10 and 8 fathoms; Pylades, half a mile in shore in 5 fathoms; hauled out to the westward, and soon deepened our water to 23 fathoms."

San-shan-tow. Beaufort Island. Elliot Group.

The Amherst, July 18th, 1832, anchored on the west side of a large island, in lat. 38° 17′ N., lon. 124° 50′ E., called Daniels Island, which is 6 or 7 leagues from the north island of Sir James Hall's Group, the latter being in lat. 37° 56′ N., lon. 124° 45′ E., at the distance of several leagues from the coast of Corea. There are soundings of 30 to 40 fathoms near the western side of Sir James Hall's Group, which appeared to consist of three islands, the north and middle one connected by reefs, but a clear passage between the middle and south islands: a reef projects from the S.W. point of the south island of the group, under the south side of which island the Alceste found good anchorage, in 7 fathoms black sand, in a bay open to the southward, but sheltered from all winds except between S. E. and S.W., and where there were two villages. Between this group and the coast, many other islands were discernible from the top of the highest hill of the south island, in lat. 37° 45′ N.

Sir James Hall's Group.

Gan-keang.

GAN-KEANG, or MARJORIBANKS HARBOUR, in about lat. 36° 25′ N., lon. 126° 25′ E., where the Amherst anchored in July, 1832, is formed among numerous islands near the coast, directly to the westward of the Table Hill, and close to the Island of Chwang-shan, where a large inlet of the sea extends to the North and N. E.,

a great way inland towards the capital city,* forming a spacious harbour between the coast and islands, completely land-locked, with soundings mostly from 8 to 12 fathoms. The approach is rather intricate, being bounded by numerous islets, shoals, and rocks; but the Amherst got a pilot to guide her into this fine harbour, which abounds with fir timber, and where fresh water or bullocks may be obtained, by application to the mandarins, if a ship touching there should require refreshments.

CHUI-YENG, or BASIL BAY, in lat. 36° 8′ N., lon. 126° 43′ E., formed on the west side by a curved tongue of land, on which stands a peaked hill, is about 4 miles wide, but too shoal for moderate-sized ships, there being only 2½ or 3 fathoms water inside the point, which obliged the Alceste and Lyra to anchor far out in 5 fathoms, and it is quite open to the southward. This bay is skirted by large villages, ornamented with trees, and surrounded by cultivation, both on the main land and on many of the neighbouring islands, which form a part of the Great Corean Chain. September, 1816, the rise of tide 2½ days before full moon was 15½ feet, low water at 8 P.M., and high water at 2½ hours A.M. Basil Bay. Tides.

From this place, the Alceste and Lyra proceeded to the southward among the islands, in soundings of 7 or 8, to 15 or 17 fathoms, and usually anchored during the night, when the flood tide was found sometimes running 3 miles per hour to the northward. Variation 2° 10′ W. in lat. 35½° N., lon. 126° 23′ E., at anchor among the group called Polaris. The southernmost part of the chain called Lyra Islands, in about lat. 34° 8′ N., lon. 126° 7′ E., terminate the group which forms Murray Sound, and which lie about 5 or 6 leagues farther North, and thought to be about 11 or 12 leagues from the coast of Corea. Other islands lie farther to the westward, the outermost of which, High Peaked Island, Captain Ross made in lat. 34° 6′ N., lon. 125° 15′ E.; it is of considerable size, with a village on the side of the hill, and it forms the S.W. limit of the great chain of islands, extending nearly North and South, parallel to the western coast of Corea.

QUELPŒRT, or QUELPERT, extends 12 or 14 leagues in a N. E. and S.W. direction, and is about 8 or 9 leagues in breadth, the S. W. extremity being in about lat. 33° 10′ N., lon. 126° 30′ E. This island is of considerable height, highly cultivated, detached from the Corean chain and smaller islands, which line the peninsula of Corea, and it is thought to be subject to the government of Japan. The inhabitants have been hitherto unfavourably inclined towards strangers, and in the last century, retained in a state of captivity the crew of a Dutch ship that was wrecked here. About 6 or 7 leagues to the westward of the island the depths are 47 and 45 fathoms, decreasing gradually to the northward to 34 fathoms near the western part of Lyra Islands, betwixt which and Quelpœrt some other isles and dangers were seen by Capt. Broughton, of the Providence surveying vessel, in 1797. Quelpœrt.

Capt. Barlow, of H.M.S. Nimrod, makes the following remarks:—" Weighed from Chusan, steering N. E. for Quelpœrt; saw the land ahead at least 45 miles distant; sounded in 45 fathoms, light mud. Observed two long, low islands close in with the land, named Cattle Island and South Island. Cattle Island is about 2 miles from Quelpœrt and 4 miles from South Island; they lie nearly North and South of each other. On the S.W. side of Quelpœrt is a very remarkable hill, much resembling a helmet; it is high, and can be seen a considerable distance. Off the north end is Capt. Barlow's remarks.

* King-ki-tao, the metropolis of Corea, is said to be in about lat. 37° 25′ N., having a large river running near it, and falling into the Inlet or Gulf of Gan-keang.

another small island, which makes in two hummocks. After standing off and on for two days, sent a boat to sound, and found anchorage between the Helmet and Cattle Island. The following morning stood in shore, keeping well to the northward, and ran along the coast at the distance of 3 miles off: no soundings at 40 and 50 fathoms. Ran in about mid-channel between the large island and Cattle Island, and anchored in 13 fathoms; the Helmet on with a bluff point N. E. by N.; east end of Cattle Island S. by E.; West end S. W. by S. This anchorage is by no means safe, particularly with S. E. winds. It suddenly came on to blow, and the Nimrod was obliged to run out. The anchorage is in 34° 14′ N., lon. 126° 17′ E. A ship wishing to make the anchorage should get in with the land some distance to the north-westward of the Helmet, and run down along shore. No dangers were visible except a small rock, on which the sea breaks heavily, about half a mile to the northward of Cattle Island: off its east end are several small rocks, which appear like a ledge."

Winds.

THE MONSOONS and WINDS on the eastern coast of China, particularly on the Fokien coast, are described as follows by Capt. J. Rees, who has had great experience in those localities.

The North-east Monsoon set in with strong gales September 18th, 1833; and again, September 19th, 1834, with similar weather.

In October, November, December, and January, light southerly winds intervene at times for one or two days, with heavy dew in the night: the change is always sudden from the southward to N. E., and the wind from this quarter blows so strong for three or four days, that a ship can scarcely carry any sail, and consequently loses ground; at such times it is best to run for some sheltered anchorage, until the wind becomes moderate.

In February and March, the southerly breezes are of longer duration, three or four days at times, but liable to the same sudden change.

In April the weather becomes mild, with a prevalence of N. E. winds.

PASSAGE BETWEEN CANTON RIVER AND MANILA, ALSO BETWEEN CANTON RIVER AND PULO AOR.

PASSAGE BETWEEN CANTON RIVER AND MANILA.

From Macao to Manila, in the South-west Monsoon.

GENERAL INSTRUCTIONS for sailing to and from China have been given in the Section which commences at page 292; in addition to which, some brief directions may be useful to such persons as are unacquainted with this navigation.

The Portuguese and Spanish ships which trade between Macao and Manila sail backwards and forwards in either monsoon. Departing from the Macao Road in the South-west Monsoon, if bound to Manila, take an opportunity, when practicable, to sail when the wind veers to the south-eastward or eastward, with which steer S. S.W. and to the southward, and endeavour to get soundings on the Macclesfield Bank. The passage may then be considered secure; for unless the wind hang at South

or S. S. E., you will be able to reach Manila Bay without tacking, and if it be to the southward, steer to fall in with Goat Island, or the land on the south side that bay.

Passage in the N. E. Monsoon.

In the North-east Monsoon, if bound to Manila, work out by Lema Channel, and endeavour to keep to the eastward, in crossing over for the N. W. part of Luzon about Cape Bolina, for a leeward current may be expected when N. Easterly winds prevail. Having approached Cape Bolina or the coast near it, a good berth should be given to that cape, on account of its contiguous shoals: after passing it and the Sisters, the coast ought to be approached within 4 to 6 leagues, and the same distance preserved from it will be proper until to the southward of the islets and rocks off Point Capones; from thence, the coast should be kept aboard to Manila Bay.

Return to Macao in the S.W. Monsoon.

The South-west Monsoon is favourable for sailing from Manila to Macao, and you may then steer direct for the Grand Ladrone; if the wind is steady at S.W. when the coast of China is approached, endeavour to make the Grand Ladrone bearing about N. by E. or North; but if it incline to veer to the northward or eastward, steer for the east end of the Great Lema, and proceed in by that channel.

Return in the N.E. Monsoon.

Departing from Manila Bay, and bound to Macao in the North-east Monsoon, coast along to Cape Bolina; from thence you may stretch off, if the wind admit a northerly course to be steered; but with the wind between N. E. and North, particularly in ships which sail indifferently, it will be proper to work along the coast, or to keep near it till abreast of Cape Bajadore, before they stand off for the coast of China.

PASSAGE BETWEEN CANTON RIVER AND PULO AOR.

From Macao to Pulo Aor, by the Outer Passage.

THE OUTER PASSAGE, from Macao towards Pulo Aor, by the Macclesfield Bank, should only be adopted in March and April, at the commencement of, and during the strength of the North-east Monsoon, the inner passage along the coast of Cochin-China being preferable.

Departing from Macao Road, if the outer passage is to be followed, keep within a moderate distance to the west sides of Potoe and the adjoining islands; when the wind blows strong and hangs far to eastward, there is generally a heavy sea upon the beam, with a leeward current, rendering it necessary to steer about S. S. E. from the Grand Ladrone, to get soundings on the Macclesfield Bank. With the wind at N. E. and moderate weather, a course S. by E. $\frac{1}{2}$ E. will generally carry you over the eastern part of that bank; but if lon. 1° East of the Grand Ladrone is exceeded, the getting of soundings will be uncertain, for in such case you will probably pass to the eastward of the bank.

If the outer passage be pursued in November or December, when strong gales and cloudy weather are sometimes of several days' continuance, preventing observations from being obtained, soundings should be got if possible upon the Macclesfield Bank; but if your situation is known correctly by chronometers, it can be of little utility to sound; for the bank being about 1° in extent from East to West, with various irregular depths on it, your exact position cannot be always ascertained by the soundings. From the Macclesfield Bank the course is S.W. to Pulo Sapata, but from having soundings on that bank, or being in its latitude, the best course to steer is S.W. $\frac{1}{2}$ S. until in the parallel of Pulo Sapata; and if then the island is not seen, steer S.W. by W. or W.S.W. till in 35 or 30 fathoms water. In dark blowing weather, when the true

position of a ship is not ascertained by chronometer, or otherwise, it would be dangerous to steer direct for Pulo Sapata, or to make it in the night: at such times it is seldom seen in passing, for ships generally give it a wide berth, by keeping well to the eastward until they have crossed the parallel of lat. 10° N., and then they steer S.W. by W. or W. S.W. to get into soundings. Some ships steer S.W. by S. from the Macclesfield Bank, till nearly in the latitude of Pulo Sapata, and pass this island a great way to the eastward, which is proper in March, April, or May: but in steering that course a good look-out will be requisite, in case of S. Easterly currents carrying you in sight of some of the shoals which lie to the E. N. Eastward and eastward of Pulo Sapata.

Having got into lat. 10° N., steer between S.W. by W. and W. S.W. until in 35 fathoms water, then about S. S.W. ½ W., or S. S.W. ¾ W., for Pulo Aor or Pulo Timoan, if bound to Singapore Strait; observing not to deepen above 30 or 32 fathoms in crossing lat. 7° 6′ N., in order to avoid the coral bank discovered by the Charlotte, which has been mentioned at page 325. But in March or April, ships bound to Europe should keep well to the eastward, and proceed between the Natunas and Anambas, and afterwards through the Straits of Gaspar.

Inner Passage. THE INNER PASSAGE,* from Macao to Pulo Aor, should always be pursued early in the season, and during the strength of the North-east Monsoon; it is more direct than the other, and when blowing strong, great ease is afforded to ships deeply laden, by steering from the Grand Ladrone directly before the wind.

To proceed by this passage, a S. S.W. ½ W. course steered direct from Potoe, or from the Grand Ladrone, will lead fair between the Taya Islands and St. Esprit Bank; the same course continued will carry you in the proper channel to the westward of the Paracel Shoals. The North Shoal bears S. 24° W. from the Grand Ladrone, distant 108 leagues, and if sights are obtained for chronometers, the course may be regulated accordingly; a S. S.W. ½ W. course will place you about 2° 50′ or 3° West of the Grand Ladrone when in lat. 17° N., which is well to the westward of the North Shoal, it being 2° 16′ West of that island.

If dark weather deprive you of observations, the ship will generally be to the westward of the reckoning by account; for the current, which sets strong to the westward close along the coast of China, continues outside, with an abated velocity, seldom exceeding 15 or 20 miles in 24 hours. Betwixt the northern extremity of the Paracels and the island of Hainan, the current sets mostly about W. S.W., particularly if the wind be at E. N. E.; its velocity depends on the prevailing wind: with moderate breezes, about 15 miles of westerly set may be expected daily in the track from the Grand Ladrone towards the coast of Cochin-China, but if strong gales are experienced, the current will probably run about one mile per hour to the westward, or rather more, at times.

* This passage was frequented by the Company's ships in early times, and constantly by the homeward-bound ships, upwards of a century ago: the Carolina, from England, bound to China by Sunda and Banca Straits, went by the Inner Passage in May, 1683, and passed in sight of Hainan.

The Fort St. David, from China, in December, 1752, proceeded by it, and saw the island Tinhosa, afterwards made the coast of Cochin-China in lat. 13° N., and passed between Holland Bank and Pulo Ceicer de Terre.

The Inner Passage, however preferable to the other, had been relinquished for a long period by English navigators, until several ships having suffered damage, and some having foundered with their crews, by hauling up for Macclesfield Bank, after leaving the Grand Ladrone, the Inner Passage was again resorted to, by a few experienced commanders, about 40 years ago, and since the limits of the Paracels have been ascertained, it is now generally adopted by homeward-bound ships.

If the current is found to set strong to the westward, a course between S. S.W. and S. S.W. ½ W. may be pursued, but not more southerly until in lat. 17° N., and fairly in the entrance of the channel to the westward of the shoals. When in this latitude, and 3° West of the Grand Ladrone, by chronometers, or, by account, a course about S. ½ W. or S. by W. may be steered, to make the coast about Cape Varela. With clear weather, and the wind steady at N. E. or N. N. E., Pulo Canton may be approached, or any part of the land to the southward of that island may be made, and coasted along at a moderate distance; but with thick weather, and the wind inclining from eastward, it is prudent not to haul close in for the coast until abreast of Cape Varela, in case of getting into the deep bay of Phuyen to the northward of that cape. If the conical mountain at the north part of this bay is discerned, it may be useful as a mark to point out the distance from Cape Varela, if night be approaching, or if the funnel on the Cape Mountain be obscured by clouds.

Passage along the coast of Cochin-China.

When to the southward of lat. 15° N., the current near the land begins to set strong to the southward; from lat. 14½° to 11½° N., it frequently sets southward along the coast during the strength of the North-east Monsoon, at the rate of 40 or 50, and sometimes 60 miles in 24 hours; but it is not always so strong, and becomes weaker beyond these limits.

If the land has not been seen prior to reaching Cape Varela, it should then be approached, and kept within the distance of 4 or 5 leagues: from abreast the Cape at the distance of 3 to 5 miles, a course steered South or S. ¼ E. leads fair from point to point for 6 or 8 leagues; but in the night, steer South from the cape until about 9 leagues from it, to give a berth to Pyramid Island, and the others around. This island will be seen in passing a few miles outside of it in the night, if the weather is clear, and may be known by its conical appearance; from hence the course is S. ½ W. to pass near the Water Islands, lying about 7 leagues farther southward; these may also be perceived in passing. Being thus far advanced, if the land appear to be distant more than 4 leagues, steer S. by W., or rather more westerly, to get a good sight of the high oblong mountain over False Cape Varela, which, in coming from the northward, may be distinguished in the night from the other prominent parts of land, by its great magnitude, high appearance, and by its sloping towards the sea with a gentle declivity.

If you intend to keep along the coast, and pass to the westward of Holland Bank, from abreast the southern part of the high land of False Cape Varela, steer S. S.W. or S. S.W. ½ W. across the Bay of Padaran; for here, the current diverging from the line of coast to S. S. Eastward is liable to carry a ship off the land, which, in such case, she would find it difficult to regain. Soundings of 40 to 50 fathoms will be got when crossing the Bay of Padaran, if not too far out: steering across the bay about S. S.W. to S. S.W. ½ W. in the night, if not very dark, Cape Padaran will be perceived nearly ahead, or a little on the starboard bow, and cannot be mistaken; for the land in the bottom of the bay is not discernible in the night.

When the cape is seen, steer towards it, and pass at from 1 to 2 leagues' distance: from this point, a S.W. by W. course will carry you about the same distance outside Pulo Ceicer de Terre; but if Cape Padaran is only about 1 or 2 miles distant when abreast, a S.W. course will be required to pass at a few miles' distance outside Pulo Ceicer de Terre. Having passed this island in daylight, from 1 to 2½ leagues' distance, steer about S.W. by W., and bring it to bear N. by E. ½ E. before losing sight of it from the deck; steer then S.W. by S. about 6 or 7 leagues, which will carry you clear to the westward of Holland Bank, and afterwards steer S. S.W. ½ W. direct for Pulo Aor.

In the night if the weather is clear, you may pass through the channel with safety, when the Gap of Padaran can be discerned. In such case, from being 3, 4, or 5 miles off Cape Padaran, steer between S.W. and S.W. by W. until the gap is open: when it bears N. by E., Pulo Ceicer de Terre is coming on with it, and if the water shoals to 10 or 11 fathoms, edge out a little to the southward; for the island is low, and should not be approached so close as to see it in the night, particularly as the soundings are irregular in this part of the channel, and not a sufficient guide. When the Gap of Padaran is brought to bear N. by E. $\frac{1}{2}$ E., Pulo Ceicer de Terre is on with it; steer then between S.W. and S.W. by S. 6 or 7 leagues to clear the west end of Holland Bank, and afterwards S. S.W. $\frac{1}{2}$ W. for Pulo Aor. If the night become dark, so as to obscure the land and the gap, when abreast of, and near Padaran Cape, a course steered between S.W. $\frac{1}{4}$ W. and S.W. $\frac{1}{4}$ S. will be proper till about 12 or 13 leagues' distance from the cape; observing to haul off from Pulo Ceicer de Terre or the coast, if the water shoal to 11 fathoms; and not to deepen above 21 or 20 fathoms towards Holland Bank. From the west end of this bank, the nearest part of Britto Bank is distant about 16 or 17 leagues in a W. S.W. direction, by which a wide channel is afforded for passing between them in the night. To keep in 16 to 18 fathoms is a good track from Pulo Ceicer de Terre until about 5 or 6 leagues past it; or if 12 or 13 leagues to the S. Westward of Cape Padaran, a S.W. by S. course may be steered for 2 or 3 leagues farther, to be certain of giving the west end of Holland Bank a good berth. Do not deepen above 21 fathoms until clear of it, nor decrease the depth under 17 fathoms towards Britto Bank, if you run far to the westward: from 21 to 19 fathoms are good depths in the channel between these banks, and having rounded the west end of the former in 20 and 21 fathoms, the direct course is S. S.W. $\frac{1}{2}$ W. for Pulo Aor.

The passage between Pulo Ceicer de Terre and Holland Bank can only be followed by persons unacquainted in daylight; many ships have, therefore, been obliged to heave to off Cape Varela in the night, by which they laboured greatly when blowing strong, with a heavy sea, and lost much time. The route outside of Pulo Ceicer de Mer and Pulo Sapata is therefore now justly preferred to the inside passage in the night, and even in the daytime, by the generality of navigators.

Directions for passing outside Pulo Sapata.

If near the high land of False Cape Varela in the evening, with dark blowing weather, rendering it unpleasant to heave to, or to run for the channel between Holland Bank and Pulo Ceicer de Terre, steer about South, or S. $\frac{1}{2}$ E., to pass to the eastward of Pulo Ceicer de Mer and Pulo Sapata on the following morning; or if the weather is very dark, steer more to S. S. Eastward, to give a wide berth to these islands in passing; for when blowing strong, the current runs with great velocity W. S.W. or S.W., whereby several ships have been horsed down upon Pulo Sapata, and were obliged to run through the narrow channel between it and the Little Catwick in dark nights, as mentioned, under the description of the Little Catwick, in a former section. In clear weather, during the day, you may pass near the east side of Pulo Ceicer de Mer at discretion, and then steer S. Westward between it and the Great Catwick, as circumstances require: or occasionally, between the Great and Little Catwicks, if care be taken to give a berth to La Paix Rock, lying nearly in mid-channel betwixt these islands: from hence, steer direct for Pulo Aor.

When near the latitude of Pulo Timoan in thick weather, keep in 32 or 33 fathoms water, which will carry you to the eastward of that island, and directly towards Pulo Aor, as has been already mentioned in the description of these islands: they are sometimes enveloped in clouds of vapour or dark haze, and care, therefore, must be taken not to run upon them in the night. Near the Anambas, and to the northward of them,

the depths are generally between 40 and 50 fathoms to lat. 5° or $5\frac{1}{2}$° N., decreasing on the west side of the channel to 35 and 30 fathoms near the meridian of Pulo Timoan.

From Pulo Aor to the entrance of Banca Strait.

Having passed on the east side of Pulo Aor, at 2, 3, or 4 leagues' distance, if bound to Banca Strait, steer S. S. E. $\frac{1}{2}$ E. or S. S. E., according as the prevailing winds and current require, to pass outside Geldria Shoal, which will be avoided by not coming under 23 or 24 fathoms in crossing from lat. 0° 40′ to 0° 56′ N.; and after clearing it, steer about S. S.W. to cross the equator in 20 fathoms: the same course continued will carry you about 4 or 5 leagues off the east point of Lingin, if there is no oblique current; but be cautious that the westerly current, which sometimes prevails, does not set you upon the Ilchester Shoal, lying to the southward of that point.

From abreast the east point of Lingin at 5 leagues' distance, the course is about S. S.W. $\frac{1}{2}$ W. to pass between Pulo Taya and the Seven Islands; but if the east point of the former is passed at a great distance, a S. Westerly course may be requisite to effect that purpose. Having passed through between Pulo Taya and the Seven Islands, the course is S. by W. towards Batacarang Point, forming the west side of the entrance of Banca Strait; and this point ought to be approached to $6\frac{1}{2}$ or 7 fathoms, to avoid the Frederic Hendric Rocks. Conform then to the directions already given for *Sailing from the northward through the Straits of Banca and Sunda.*

From Pulo Aor to Canton River, by the Outer Passage.

When the SOUTH-WEST MONSOON is set fairly in, ships bound to Canton River ought to proceed by the Outer Passage. After having passed near Pulo Aor on the east side, a N. N. E. $\frac{1}{2}$ E. course would carry a ship direct towards Pulo Sapata, were it not for an easterly current setting frequently out of the Gulf of Siam, which generally leads ships several leagues to the eastward of Pulo Sapata, when that course has been pursued from Pulo Aor. To avoid passing near the Charlotte Bank in lat. 7° 6′ N., it may be proper for a large ship to steer from Pulo Aor N. N. E. until in that latitude, and from thence N. E. by N. to see Pulo Sapata; but if sights are not obtained for chronometers, the approach to this island will be known by the soundings, already described under the articles *Pulo Condore* and *Great Catwick.*

Having passed to the eastward of Pulo Sapata at 4 to 6 or 7 leagues' distance, the course is N. E. $\frac{1}{2}$ N. to get soundings on the middle of the Macclesfield Bank; and in this track also a set to the eastward is often experienced in the South-west Monsoon. From having soundings on the eastern part of that bank, the course is N. by W. to the Grand Ladrone, which a ship ought to endeavour to make bearing about North or N. by E. if the wind be steady, and blowing strong at S. Westward or Southward. It is improper in any season to fall in with the land to the westward about St. John.

Ships passing Pulo Sapata after the middle of September should keep to the eastward after they are in lat. 12° or 13° N., being then to the northward of the shoals, for as they advance to the northward, N. E. or E. N. E. winds may be expected. With these winds they ought to make long stretches to the northward; and short tacks must be made to the eastward at times, when the shifts of wind are favourable, to keep up the easting. In October, a ship ought to endeavour to get near the coast of Luzon, and until she has passed to the northward of Cape Bolina, she should not stretch off for the China coast, and great caution is required when crossing the latitude of the Pratas Shoal.

FROM PULO AOR TO AND FROM MANILA, BY THE OUTER PASSAGE, WITH A DESCRIPTION OF MANILA BAY.

Passage to Manila.

SHIPS BOUND TO MANILA, from Pulo Aor, should steer from Pulo Sapata N.E., but not more easterly until in lat. 12° or 12½° N., on account of the numerous shoals to the eastward of that island; because they extend to about lat. 11° 40′ or 11° 45′ N., the northernmost bearing about E.N.E. or N.E. by E. ¾ E. from Pulo Sapata. Having got into lat. 12° 30′ N., a direct course may be steered, to make Goat Island and Luban, situated about 12 or 13 leagues to the S. Westward of the entrance of Manila Bay, leaving Fortune Island about 3 leagues on the starboard side. This island lies 6 or 7 miles off the coast of Luzon, and bears S. by W. ½ W. from Corregidor, the large island in the entrance of Manila Bay; it is small, high, and rocky. After passing Goat Island to the northward at 3 or 4 leagues' distance, steer direct for the Island Mariveles, or Corregidor, which is in the entrance of Manila Bay, and bears from Goat Island N. E. ½ E., distant about 15 leagues.

MANILA BAY is a large inlet in the S.W. coast of Luzon, and is about 22 miles in extent each way; the city of Manila stands on its eastern shore, about 25 miles from the entrance.

Corregidor, or Mariveles, the principal island in the entrance to Manila Bay, lies over towards the north shore, and is about 12 miles in length East and West. There is fresh water to be procured under a steep cliff at its western end, but the landing is on a stony beach, and is inconvenient. The land on both sides Manila Bay is high, and on the north side, nearly fronting Corregidor, lies Mariveles Bay, about a mile wide, and 1½ miles deep, with good anchorage, sheltered from all but S.E. and S.S.E. winds: ships of any size may moor here, and procure excellent water. Some rocky islets project one mile off the S.W. point of the entrance; these are called the Puercos, or Hogs: ships may anchor in 17 fathoms, with the village bearing N.W. by W., or they may run farther into the bay if necessary; the bottom being good holding ground, and the anchorage safe. This is a convenient place for ships to touch at when in want of wood and water, the former being an expensive article at Manila.

Soundings of 50 to 40 fathoms will be got when within 2½ or 2 leagues of Corregidor, decreasing gradually to 27 or 26 fathoms about 2 miles to the westward of it. Pulo Cavallo, a high bluff rock, of considerable size, partially covered with verdure, bears from Corregidor S. E. by S. about half a mile: and the Fraile rock or islet, which appears like a sail, is about 2½ or 3 miles S. S. Eastward from Pulo Cavallo, towards the south shore. Pulo Cavallo is steep to, with soundings of 20 to 17 fathoms between it and the shore; but a reef and straggling rocks extend between it and the Island Corregidor. The Nun, or Haycock, another pretty high rock, bears from Corregidor W. ¾ S. about 2½ miles, with 27 fathoms water within a quarter of a mile of it all round. The soundings from it decrease regularly to 20 fathoms within a quarter of a mile of the

north shore, and deepen to 29 or 30 fathoms near the N.W. part of Corregidor, close to which there is a perforated rock.

Betwixt Corregidor and the north shore the depths are 50 and 48 fathoms, within a quarter of a mile of the island, 26 fathoms in mid-channel, decreasing quickly to 16 or 15 fathoms, stony ground, within a quarter of a mile of the north shore.

When about 2 leagues to the westward of Corregidor, steer for it; with a fair wind, the common passage is between it and the Haycock, afterwards on the north side of Corregidor. From hence to Manila the course is N. E. by E. $\frac{3}{4}$ E., distant 11 leagues, and to Cavité E. by N. $\frac{1}{2}$ N. 8 or 9 leagues. St. Nicholas Shoal, on the eastern side of the passage, is much in the way, having only 11 feet water on its outer edge, with the N.W. part of Corregidor bearing W. 13° S., and Cavité Church E. 17° N.; within a ship's length of it to the N.W. there are 13 and 15 fathoms water, the soundings being no guide in approaching it, because the bank is so steep. The mark to avoid this shoal is to keep the Haycock open with the North or N.W. part of Corregidor bearing W. S.W. until the steeple of Cavité Church bear East, and a remarkable hummock, which stands close to the sea upon a point of land on the north shore, N.W. by W. $\frac{1}{2}$ W.: being then clear of St. Nicholas Shoal, steer for Cavité or Manila, at discretion.

In the fair channel, between the shoal and the north shore, the depths are 17 and 18 fathoms, decreasing gradually towards that shore to 5 and 4 fathoms; and in steering eastward, the depths also decrease regularly to 5 fathoms off Cavité, where ships anchor a little more than a mile off shore in that depth, the bottom all stiff mud.

When the wind is blowing from the eastward, out of the bay, the current runs out through the North Channel to the westward; it is therefore proper, at such times, to adopt the channel between Corregidor and the south shore, it having more room to work to windward, and no hidden danger. To enter the bay by this channel, caution is requisite when you come abreast the easternmost high land on the south shore, which bears S. E. $\frac{1}{2}$ E. from Corregidor; for the trail of St. Nicholas Shoal trends away gradually towards this high land, and the water may shoal suddenly in approaching it, from 12 to 7 or 6 fathoms, rocky ground. Do not, therefore, come under 12 or 13 fathoms, nor under 15 or 16 fathoms when rather to the eastward, and keep the Haycock then open with the north part of Corregidor; from 15 fathoms water, the next cast may be 7, and then 4 fathoms on the verge of St. Nicholas Shoal, when the Haycock is shut in with Corregidor.

Within three-quarters or half a mile of the east part of Corregidor there are 22 and 23 fathoms, and when it can be rounded, stand over for and work along the north shore, which has 15 or 16 fathoms within a quarter of a mile, and 10 or 12 fathoms about a cable's length off: although, in some places, the water shoals suddenly from 15 to 10, 7, and 5 fathoms, there is no invisible danger; and when past the Corregidor, the north shore has good anchorage over a sandy bottom. Farther to the North and eastward this shore becomes more flat, the soundings decreasing regularly from 10 to 8, 6, 5, 4, and 3 fathoms close in shore.

The tides in Manila Bay are irregular; with an easterly wind, the ebb runs out 18 hours together, betwixt Corregidor and the north shore, pretty strong; the flood about 6 hours to the eastward, sometimes weak, at other times with considerable strength: the perpendicular rise is about 3 feet. Tides.

The North-east Monsoon blows strong out of Manila Bay at times, accompanied by a cloud resembling smoke, which is driven out of the bay to the S.W., and forms an arch in that horizon, when the sky is otherwise clear; but sometimes sea breezes from North-east Monsoon.

S. Westward blow into the bay in the North-east Monsoon after mid-day, increasing in strength as you advance into the bay.

Cavité. CAVITÉ, in lat. 14° 29′ N., is the port and marine arsenal of Manila, where ships are built, and to which those are hove down that want repairs, it having excellent conveniences for that purpose. It is well fortified, and situated on a low point of land, which forms a good harbour or cove; the deepest water in it is 6 or 7 fathoms, soft mud, with shelter from West and S. W. winds. As the water in the wells here is brackish, the inhabitants are supplied with fresh water from the river by Old Cavité.

The course from Cavité to Manila is N. N. E. $\frac{1}{4}$ E. about 3 leagues, and from the former, the depths increase regularly to 8 or 9 fathoms, about mid-way, then gradually decrease to $4\frac{1}{2}$ or 4 fathoms off Manila. With a turning wind between them, a ship may approach the shore to 5 or $4\frac{1}{2}$ fathoms, the bank fronting it being very flat, and composed of soft mud.

Anchorage at Manila. A good berth to anchor in Manila Road is in 5 fathoms water, about a mile off, with the north bastion N. $37\frac{1}{2}$° E., the S.W. bastion E. 20° N., the cupola E. 37° N., and the fishing stakes at the river's mouth N. 18° E. Large ships generally anchor at Cavité Harbour.

Manila City. MANILA CITY, the capital of Luzon, one of the largest of the Philippine Islands, and the seat of the Spanish government in the East, is situated in lat. 14° 36′ N., lon. 121° $2\frac{1}{2}$′ E., by an observation of Jupiter's satellite, corroborated by chronometers.* It is large and convenient for trade, the country adjacent producing excellent indigo, sugar, tobacco, hemp for cordage, &c.; but the inhabitants around are indolent, and will not cultivate the ground to rear these articles, unless an agreement is previously made with them, and money paid in advance. Some trade is carried on with China, Batavia, and several of the Philippine Islands; but the chief dependance of this place was formerly on the trade to Acapulco, carried on in two or three ships, which usually sailed in March or April from that place, and arrived at Manila in August or September, but not always regularly.†

During the months of June, July, and August, the air of Manila is rendered impure by noxious exhalations arising from the swampy land around; and the weather being sultry, with much rain at times, febrile complaints are then likely to appear.

Firewood is scarce here and at Cavité, it being brought from the interior. Ships moored in the road may water expeditiously, by sending their boats into the river as far as the bridge, where the water is good.

Captain Goodwyn, of the ship Florentia, visited Manila in May: the following particulars respecting it are taken from his remarks. "This celebrated city, which in the year 1740 contained only from 6,000 to 7,000 inhabitants, now contains 80,000. The population of the island is estimated by the Government returns at 4,390,000 souls. The fortifications are good; the guns (those towards the water side) are mostly 24-pounders,

* This is the longitude of Manila, as determined by Captain Ross, in the Company's surveying ship Discovery, and he made it 12° 1′ E. of Pulo Sapata, by chronometers. The French circumnavigator, La Perouse, made the longitude of Manila about 3 miles farther East than Captain Ross; but Mons. Gentil made it in lon. 120° $51\frac{1}{2}$′ E., which was long thought to be its true longitude. Don J. Vernacci made it in lon. 120° 55′ East of Greenwich, so that its true longitude seems not yet determined.

† These galleons did not sail together, nor exactly at stated periods, from Manila, but usually in July or August; they sometimes went round the north end of Luzon, at other times through the Straits of Manila or St. Bernardino, and arrived at Acapulco about Christmas, or generally between the early part of November and middle of January. They sometimes arrived at Manila in July, and generally made the Island Samar about Cape Spirito Santo, then came in by the strait of St. Bernardino.

but having been cast here, are not to be relied on. The principal breastwork on the citadel is a battery of 24 guns, abreast of the anchorage, with a cross fire from the north and south bastions, besides two other outworks of about 14 guns. These last cannot be brought to bear until a ship is in 3 fathoms water, and cannot do much execution except when landing any force within their range; any force landing to the northward or southward of the town might take possession of the suburbs instantly, and of the city afterwards, as the ditch round the walls might be easily waded, it being nearly filled up with mud. Even if the bridge were destroyed, the ruins would fill it, and almost make a passage for storming. To the northward I am not aware of defence, but to the southward is a battery, about a mile from the fort, near some barracks, where there is always a regiment. . . . The British did not appear to be favourites with the governor; it was particularly noticed that he never returned or acknowledged their salute when meeting, and therefore, after this slight, many of them discontinued their salute to him. His excellency had also issued orders for all guns in the hands of merchants (and they were mostly in the hands of the English) to be sent to the artillery ground as a depôt, and it was asserted that he had been very minute in his inquiries respecting foreigners resident in or arriving at the place; and that if the British fleet wanted provisions or refreshments, they were to be supplied at some of the ports to the northward, as he objected to their coming into Manila Bay."

"The imports of Manila are chiefly British manufactures, linens and cottons, hardware, and articles of British produce, French and German toys and goods, wines, &c. Its exports are sugars, rice, hemp, tobacco, hides, and cotton; a small quantity of coffee, indigo, rhubarb, native cloths, and hats. Since the opium receiving-ships left Canton River, this port has become the depôt for opium, and vessels carrying on the trade come over here for their supply. They are very smart vessels, and are well manned and armed. Provisions are here very cheap: the beef is good, though small; Supplies. mutton is scarce; pigs, poultry, and vegetables are good and reasonable; fruit plentiful and cheap. Water is obtained for the shipping by proceeding a few miles up the river, until it is found fresh enough; low water is the best time to fill the casks. Water in Manila is kept in tanks in the houses, and some is brought down from the upper part of the river for the use of the place."

To return from Manila to Pulo Aor.

DEPARTING FROM MANILA, if bound to the straits of Banca or Malacca, the North-east Monsoon is the proper season; and in sailing out of the bay, ships should conform to the directions given for entering it, and to the marks for avoiding St. Nicholas Shoal. Having cleared the bay, steer W. by S. until in lat. 12° N. and 9° W. from Goat Island by chronometer: if the longitude is not ascertained by chronometer or by lunar observations, do not come to the southward of lat. 12° N. until 9° of West meridian distance has been made from Goat Island. From this situation steer S.W. for Pulo Sapata, observing that a westerly current in this season is likely to carry a ship ahead of the reckoning: if, on the contrary, Pulo Sapata is not seen when in its latitude, steer S.W. by W. or W. S.W. to get into soundings, then S. S.W. ½ W. for Pulo Aor; agreeably to the directions given in the last section for sailing by the *Outer Passage* from Macao to Pulo Aor.

SHOALS IN THE SOUTH-EASTERN PART OF THE CHINA SEA, WITH PALAWAN ISLAND AND PASSAGE.

Shoals in the S.E. part of the China Sea.

THE ARCHIPELAGO of sand-banks, rocks, or reefs above and under water, lying between the coast of Palawan and Pulo Sapata, is so extensive, and the dangers that form it so numerous, that there can be little utility in entering into a minute description of them, for indeed they ought to be avoided by all navigators. No ship can enter within the limits of this dangerous Archipelago without getting embarrassed amidst the shoals; there are strong currents or irregular tides among them, which render a ship's place very uncertain when observations cannot be obtained; and the rise and fall of the tide is considerable amongst the shoals during the springs. Although some ships have with difficulty and risk passed through them, others have struck or lost their anchors among the extensive coral flats; and the Fanny, the Betsy, and many other ships, have been wrecked nearly in the middle of the Archipelago. It seems, therefore, only necessary to describe briefly the *exterior* limits of those dangers.

From the west coast of Palawan, the shoals extend N.W. and West, to within about 1½° of the meridian of Pulo Sapata, as the Forth Shoal is the westernmost known danger. This and the Alexander Shoal appear to be detached from the great mass, being 27 leagues to the N.W. of the West London Reefs.

Between several of the shoals there are channels, from 6 or 8 to 15 leagues wide; and between the outer shoals off Palawan and those which lie within 5 or 6 leagues of that island there is a channel about 8 or 9 leagues wide. In these channels, and close to the outer reefs, there are no soundings.

North-eastern dangers.

THE NORTH-EASTERNMOST *known* danger is a reef of breakers, in lat. 10° 49′ N., lon. 117° 10′ E., distant about 30 leagues from the coast of Palawan, seen in 1803 by the brig Pennsylvania. About 15 leagues farther eastward, in lat. 10° 57′ N., about lon. 117° 53′ E., there is a bank of coral and white sand, extending about a mile East and West, and a quarter of a mile broad, with soundings on it from 8 to 11 fathoms, discovered by the Sea Horse in 1776. The ship Bombay, Capt. Routh, in November, 1836, passed over the west end of a coral reef, which was visible under the ship's bottom, the water being green and disturbed to windward. The reef appeared to be about half a mile in extent. Lat. 10° 40′ N., lon. 117° 50′ E.: soundings immediately after passing the shoal 65 fathoms. This may probably be a continuation of the Sea Horse Bank.

The Minerva, Captain Templer, passed over a bank, to the north-westward of the Sea Horse Bank, in November, 1835, having from 10 to 17 fathoms water on it; the bank appeared to extend about 4 miles North and South, and as no discoloured water was seen to the eastward, but several apparently shoal patches were perceived to the westward, it is supposed that the ship passed over the eastern part of the bank. The centre of the bank is in lat. 11° 7′ N., lon. 117° 21′ E.

THE NORTHERNMOST DANGERS* are two sand-banks or low sandy isles, with a tree on the northernmost of them, in lat. 11° 29′ N., lon. 114° 20′ E., the other to the S.W. of it, about 2½ or 3 leagues' distance: they were seen by the South Sea Castle in 1762; although she made them only 4° East meridian distance from Pulo Sapata, they are probably upwards of 5° from that island, as may be inferred from the examination of this part by Captain Ross. About mid-way, nearly in a direct line between these and the north-easternmost danger mentioned above, lies a low isle in lat. 11° 1′ N., surrounded with breakers, having a reef projecting to the N. Eastward, which has been seen by several ships. Northern dangers.

There are two isles, with reefs at each extremity, in lat. 11° 27′ N., lon. 114° 22′ E., the whole extending nearly N. E. and S.W. about 7 or 8 miles.

An island, in lat. 11° 8′ N., lon. 114° 18′ E., about 6 leagues to the southward of the above, having a sand-bank 5 miles to the West, and a reef projecting 5 miles to the eastward.

THE NORTH-WESTERN and WESTERN DANGERS are the following: An island in lat. 10° 44′ N., lon. 114° 26′ E., with a sand-bank 5 miles to the N.W., and several detached shoals extending about 3½ leagues to the East and E. N. E. of the island. North-western and western dangers.

A reef in lat. 10° 15′ N., lon. 113° 40′ E.; and about 5 leagues S. Eastward of it, Discovery Reef, some of the rocks above water, extending from lat. 10° 0′ to 10° 8′ N., lon. 113° 50′ E., from which Captain Ross had a narrow escape in the Discovery; and a third reef lies about 4 leagues East from the latter. Discovery Reef.

Dhaulle Shoal appears to be a new discovery made by the schooner Dhaulle, in April, 1826, when proceeding from Calcutta towards China, and is thus described in her log-book: Dhaulle Shoal.

"At 2½ A.M., being a moon-light night, observed an uncommon appearance under the vessel's bottom; sounded, and had 10, 7, then 3 fathoms; anchored immediately, and at sun-rise the shoal appeared from the mast-head to be about 1 or 2 miles in circumference, but no part visible seemed to be shoaler than where we anchored. Weighed, and stood to the N.W., deepening quickly to 7, 18 fathoms, then no ground."

This vessel, at noon on the preceding day, passed to the westward of the West London Reef at the distance of a mile, from thence steered N. by E. ½ E. 42 miles, until she anchored in 3 fathoms on the shoal, which would place it in lat. 9° 35′ N., lon. 112° 22′ E., or 42 miles West of Crawford Shoals, or the Investigator N.W. Shoal, if the schooner had no easterly current in her run between the West London Shoal and the foregoing dangerous bank.

The West London Reef is in lat. 8° 55′ N., lon. 112° 0′ E., with other smaller reefs stretching 3 leagues E. N. Eastward. Captain Ladd, of the ship Austin, in 1829, got close to a shoal even with the water's edge, said to lie several leagues to the S.W. of West London Reef; but the distance is rather uncertain, having lost his journal. The Rob Roy is also said to have struck on a rock 9 or 10 leagues to the south-westward of the West London Reef. The lat. given of this danger is 5° 44′ N., and the longitude 111° 34′ E. Mr. P. M. Stavers, of the ship Mermaid, describes this danger as a curved coral island 10 or 12 feet above water, and places it in lat. 8° 37′ N., lon. 111° 49′ E. West London and other reefs.

* The South Sea Castle made them in lat. 11° 40′ N.; but these northernmost dangers, from the examination of them in 1814, by Captain Ross, extend from lat. 11° 28′ 36″ N., lon. 114° 24′ E., to lat. 11° 21½′ N., lon. 114° 16½′ E. The Hainan fishermen visit the islands and shoals in this part of the China Sea in March and April to fish, as well as those of the Paracels.

Nearly mid-way between the London Reefs and Owen Shoal (which lies 10 leagues farther South), the Admiralty chart shews a shoal spot, in lat. 8° 35′ N., lon. 112° 4′ E.

Alexander Rock and Forth Shoal.

About two-thirds over to the N.W. from the Dhaulle and West London Shoals, towards the Minerva Bank, are the ALEXANDER ROCK, in lat. 10° 28′ N., lon. 111° 27′ E., and the FORTH SHOAL, in lat. 9° 47′ N., lon. 110° 18′ E.

East London Reef.

East London Reef, in lat. 8° 48′ N., lon. 112° 24′ E., extends above 2 leagues in an easterly direction; this and the West London Reef were seen by the London in 1786, and afterwards by several other ships; Captains Ross and Maughan, in their examination of the above-mentioned dangers, could not discover any others farther to the westward, although many traverses were made for this purpose, between these shoals and Pulo Sapata.

Crawford Shoals.

Crawford, or Investigator N.W. Shoals, are about 6 miles in length, formed into three patches, with a high surf beating on their S.W. part, seen by Captain Crawford in the Investigator, and they consist of coral reefs, nearly even with the water's edge. They were found to extend from lat. 9° 40′ N., lon. 113° 4′ E., to lat. 9° 42′ N., lon. 113° 8$\frac{1}{4}$′ E., by good chronometers measured to the Great Natuna and to Singapore.

Stags Shoal.

Stags Shoal, the north end, in lat. 8° 24′ N., lon. 112° 57′ E., was seen by the brig Amboina, Captain Trinder, September 7th, 1802, and named by him from the resemblance of the rocks to the horns of a stag. No soundings were obtained at 80 fathoms within a quarter of a mile of the north end of the shoal, which extended S. E. and S. S.W. in form of a triangle, with rocks above water, and breakers on various parts, the intermediate space apparently very shoal, and the southern extremity could not be discerned from the mast-head.

The shoal in lat. 7° 56′ N., lon. 111° 47′ E., seen by the Abercrombie in 1836, appears to be the same as the Orleana Reef, hereafter described.

Amboina Sand.

Amboina Sand, seen by the Amboina brig, is a sand-bank, with rocks above water, which she made in lat. 7° 51′ N., lon. 113° 6′ E.; but Captain Ross, in 1817, made this danger in lat. 7° 52′ 20″ N., lon. 112° 56′ E., or 5° 26′ West of Long Point on Palawan, by chronometers.

Owen Shoal.

Owen Shoal, in lat. 8° 8′ N., lon. 111° 59′ E., by two chronometers agreeing in a run of 10 days from Macao, discovered May 11th, 1835, by Captain Owen, of the ship David Scott, on the passage from Canton River towards England, had not been previously known. He got on the shoal, and had soundings of 6 to 4$\frac{1}{2}$, and once 3$\frac{3}{4}$ fathoms in passing over it, a little past noon, steering S. S. E., and at one P.M. cleared the shoal, having then no bottom. This shoal appeared to be about 2 miles in extent, consisting of black and white speckled coral, in a state of rapid accretion, apparently by the vitality and energy of the madrepores, observed in recent formations of large pieces of coral brought up by the lead. The patches of speckled coral were bright and alarming while on the shoal, and although no breakers were perceived, as the sea was then very smooth, yet, with a heavy swell, the sea probably rises in rollers over the shoal patches, when a large ship would be liable to strike on some of them.

Orleana Reef.

Captain Cameron, of the ship Orleana, in his passage down the China Sea, is said to have observed a shoal of not less than 20 miles in extent, N.N.W. and S. S. E., about 7 or 8 leagues to the S.W. of Owen Shoal. When in lat. 7° 58′ N., lon. 111′ 38° E., white patches were seen from the mast-head, several miles to the southward. One cast of 8 feet was obtained in smooth water, and as ripplings were seen from the ship, Captain Cameron thinks that there may be much shoaler water.

PRINCE OF WALES BANK was not known to have less than 10 fathoms water on it, until the fleet under convoy of H. M. Ship Grampus got upon it, Oct. 20th, 1810; and by mean of the observations and chronometers of the fleet, it was found to extend from lat. 8° 3′ N. to 8° 13′ N., lon. 110° 24′ E. to 110° 34′ E. The soundings got in crossing over the bank were in general from 12 to 30 or 40 fathoms, coral, and the Grampus had 9 and 10 fathoms for a considerable time; but the Bombay got suddenly from 45 fathoms no ground to 5½ fathoms upon the southern part of the bank, then wore. The coral rocks continued visible alongside for about a quarter of an hour afterwards, with overfalls from 5½ to 12 fathoms, but the water soon deepened to 50 and 60 fathoms no ground, in steering to the north-westward. Prince of Wales Bank.

The reflection from the white coral appeared very conspicuous in several places, and as the Bombay had only 5½ fathoms water on some of the rocky patches, probably there may be less on others, consequently this bank may prove dangerous to large ships, if they cross over it when the sea is running high; it ought therefore to be avoided by large ships when late in the season they may have occasion to cross over from the common track towards the Palawan Passage. Captain Ross got into 15 fathoms water on the south part of this bank, May 8th, 1811, and made the lat. 8° 5′ N., lon. 110° 27′ E., or 1° 25′ E. of Pulo Sapata, by chronometers.

THE SOUTHERNMOST DANGERS of this archipelago are in about lat. 7° 20′ N., extending from lon. 113° to 115° E., and about 16 leagues to the northward. Within these limits there are several large reefs with high breakers; also extensive shoal coral flats, having only 4 or 5 fathoms, and probably less water in some parts, with gaps of no ground between them. The principal are the following. Southern dangers.

The Investigator Shoal, examined by the Company's surveying ship of this name in 1813, appears to be one of the N. Easternmost, and the most extensive of the last-mentioned dangers; its western point being in lat. 8° 5′ N., lon. 114° 35′ E., and its eastern extremity in lat. 8° 10′ N., lon. 114° 51′ E., and it is about 4 miles in breadth North and South. Investigator Shoal.

The Buckinghamshire Shoals, seen by Captain Shea, in the Company's ship of this name, on his passage to Canton by the coast of Palawan, appear to be a new discovery amongst the numerous dangers by which this part of the China Sea is garnished. Buckinghamshire Shoals.

The first shoal, seen at 5½ P.M. November 4th, 1833, appeared to consist of two reefs of rocks with high breakers, extending 1½ miles E. by S. and W. by N., and half a mile North and South; the centre of which was found to be in lat. 8° N., lon. 114° 55′ E., by observations of sun, moon, and stars.

The other shoal, seen at 11 A.M. on the following morning, appeared to consist of two dry white banks, with a ridge of rocks extending from them to the westward about 2 miles, which was considered to be situated in lat. 8° 30′ N., lon. 115° 19′ E.

Swallow Shoal has some rocks, about the height of a large ship's hull, above water at its eastern point, which appear to be of small extent. They were seen by the Swallow in 1801, and also by the Lady Clive; both ships agree in placing them in lat. 7° 23′ N., lon. 113° 44′ E.,* by good observations, although they were not seen by these ships at the same time; and they lie about 8½ or 9 leagues to the northward of the Royal Charlotte Shoal. Swallow Shoal.

* Captain Crawford, in the surveying ship Investigator, saw these rocks in 1813, and made them in lon. 113° 50′ E.

Captain Ross examined the Swallow Shoal in 1817; he made it in lat. 7° 23½ N., lon. 113° 52′ E., and found it to extend E. by N. and W. by S. 2½ or 3 miles, being formed, like most of the shoals hereabout, of a belt of coral rocks, with a basin of deeper water within it. The large dry rocks at the eastern end of the shoal are mixed with some very white sand, and its outer edges are probably dry at low water spring tides.

Other Shoals. Several ships pass between the Swallow Shoal and the Royal Charlotte Shoal, but the best channel is to the southward of the latter, betwixt it and Louisa Shoal, which should be adopted by all ships bound to Balabac Straits, and by those which intend to proceed along the coast of Palawan.

Between the south-westernmost of the shoals mentioned above and the north part of Borneo there are other dangerous reefs, or coral shoals, particularly within 15 leagues of that coast. The following are those nearest to the track of ships bound to the Straits of Balabac, or by the Palawan Passage, to Manila, or China.

Shoals off Borneo. THE WESTERNMOST of the SHOALS that lie far off the COAST OF BORNEO is a reef of rocks and sand, in lat. 5° 35′ N., lon. 112° 28′ E., not well determined: it is about half a mile long N. N.W. and S. S. E., very narrow, seen by the Sea Horse in 1776, and by the Luconia in 1803. This ship passed between it and another reef with breakers, said to have 1½ fathoms water over the rocks, in lat. 5° 24′ N., bearing from the former about S. S. E. distant 4 leagues. To the S. S.W. of these, in lat. 5° 5′ N., there is a shoal with 2 fathoms water; and S. E. ¾ S. from it, in lat. 4° 57′ N., there is a dry sand; both were seen by the Luconia. About 12 leagues to the eastward of these and the former shoals there are other shoals.

Friendship Shoal. Friendship Shoal appears to extend N. E. and S.W. 3 or 3½ leagues: the ship of this name, bound to Balambangan, in September, 1804, got suddenly on the edge of it in 4¼ fathoms, in lat. 5° 52′ N., and steered along the west side, sometimes within a cable's length, the water appearing very shoal to the south-eastward, as far as the eye could reach from the mast-head. Noon observation made the north end of the shoal in lat. 6° 0′ N., lon. 112° 49′ E., by observations of ☉ ☾ taken near it. The Surat Castle, with the Royal Charlotte in company, at 6 A.M. October 11th, 1814, got upon this shoal, and anchored in 4½ fathoms, coral rock, in lat. 5° 52′ N., lon. 112° 34′ E., by noon observation and chronometers; but observations of stars taken at 4 A.M. made the latitude more to the southward. It appeared a long, narrow bank, with soundings from 30 to 40 fathoms near its verge, and there probably may be less water on it than where the Surat Castle got suddenly into 4½ fathoms: a little to the South west of it there is no bottom at 60 fathoms.

Louisa Shoal. Louisa Shoal is in extent about 3 miles E. S. E. and W. N.W., of an elliptical form; the rocks on it are generally covered at high tide, excepting two small ones on its eastern extreme. It is steep to, with very high breakers in blowing weather; but, on a fine day, the Ruby sent her boat to it, and they landed on the coral rocks, and had 8 fathoms water within 30 yards of its western edge; the tide was then rising, and setting over the shoal to the E. N. E., about one mile per hour.

Many ships have passed close to this shoal, and the mean of a selection of the best observations places it in lat. 6° 20′ N., lon. 113° 18′ E., by chronometers and lunar sights. Several navigators make it about two miles more to the northward, and six miles more to the eastward.

Royal Charlotte Shoal. Royal Charlotte Shoal, in lat. 6° 56½′ N., lon. 113° 37½′ E., or 4° 35′ E. of Pulo Sapata, by chronometers, measured by Captain Ross, who examined it in his survey

of the Palawan Shoals, is about 12½ or 13 leagues to the north-eastward of Louisa Shoal, and it is not more than 1½ miles long, of a quadrangular shape, composed of rocks and breakers: this shoal has been seen by several ships, and although the mean of their observations places it about 16 or 17 miles more easterly than the position above stated by Captain Ross, yet this officer's observations are probably near the truth, being made with good chronometers, and instruments supplied purposely for surveying.

THE SOUTH-EASTERN DANGERS, namely, those which form the Royal Charlotte Shoal on the South to the North-east point of the bank, and which form the western boundary of the Palawan Passage, are the following.

Viper Shoal is thought to be the south-westernmost of those which form the outside of the Palawan Passage, and it appears to be the nearest shoal on the outside of the fair channel, after passing to the eastward of the Investigator Shoal. It is an extensive reef, stretching N. E. by E. and S.W. by W., with high breakers and small rocks in some places, which seem to be nearly covered at high water. The ship Cape Packet, October 27th, 1810, was swept along the southern verge of this shoal by the current, within a mile of the rocks, when nearly calm; and it was found to lie in lat. 8° 0′ N., lon. 115° 25′ E.,* or 1° 19′ W. from the Royal Captain Shoal, by chronometer. Viper Shoal.

Half-Moon Shoal† was examined March 18th, 1817, by Captain Ross, who found it formed by a narrow belt of coral rocks of oblong shape, containing a basin of deep water in the centre, which belt appeared to have its greatest breadth at the southern part of the shoal, where there was not depth sufficient for the boat to pass over it into the basin. The Discovery, at this time, passed along the eastern edge of the shoal at half a mile distance, and that side of it extends 4 or 5 miles in a N.W. and S. E. direction. Sent a boat to anchor on the south point of the shoal as a mark, and continued to ply about under top-sails close to her till noon, but could get no soundings with 90 fathoms line, when within hail of the boat. Observations with five sextants made the south point of the shoal in lat. 8° 54½′ N., lon. 116° 15½′ E., or 2° 6¾′ West from Long Point on Palawan, and 7° 12′ East of Pulo Sapata, measured by good chronometers eight days afterward. The western side of the shoal extends about 4 or 5 miles in a North and South direction, and its eastern side forms a curve outwards: several black rocks about the south point appeared to be 6 feet above water, at our first approach, but at noon they were nearly covered, the tide having risen several feet. When within a cable's length of the south-west side, in several places no soundings could be got with 100 fathoms line. Half-Moon Shoal.

Royal Captain Shoal was seen by the Cape Packet three days after passing the above-mentioned shoal, which she approached within a mile on the S. E. side, and saw many rocks above water, probably covered or even with the surface of the sea at high tide. This shoal was also seen by Captain Hamilton, of the Bombay, November 1st, 1810, who describes it as long and narrow, extending N. E. by N. and S.W. by S., with high breakers on a sand-bank at the S.W. part, and he made it in lat. 9° 2′ 24″ N., lon. 116° 42¾′ E., by chronometers; the Cape Packet having made Royal Captain Shoal.

* Captain Ross, in 1817, could not find this shoal in the situation assigned to it by the Cape Packet.

† Captain Ross thinks this is the Half-Moon Shoal of the Sea Horse, and that the Royal Captain was lost upon it, and not upon the shoal which bears her name.

it in lon. 116° 44′ E. When this shoal bore from N.W. ½ N. to W. N.W., seen from the mizen rigging, distant about 5 miles, the Island Palawan bore from East to E. S. E. at the same time, apparently not more than 11 leagues off.

Captain Ross, in the surveying brig Antelope, examined this shoal in April, 1811, and made its centre in lat. 9° 3′ 52″ N., lon. 116° 41½′ E.

Bombay Shoal. Bombay Shoal was seen by the Cape Packet, and at half-past 2 P.M., October 31st, 1810, when the body of it bore North, distant one mile, made it in lat. 9° 27′ N., lon. 116° 55′ E., or 1° 30′ E. from the Viper Shoal, by chronometer. November 2nd, 1810, the Bombay saw this shoal, which appeared to have a basin of smooth water in the interior part, surrounded by breakers, with several rocks above water, and some dry sand on the northern and southern extremes. Captain Hamilton made the body of the shoal in lat. 9° 26½′ N., lon. 116° 54′ E., by chronometers; and when visible from the mast-head, bearing N. by W. ½ W., distant about 10 miles, the high, round mountain Pampandoyen bore S. E. ½ E., remarkable rugged land S. E. ½ S., body of some high land to the southward S. S. E. ½ E., and the northern extreme of Palawan E. ½ N., distant from the nearest land 10 or 11 leagues.

The Carnatic Shoal, on which the least depth given is 3½ fathoms, is in lat. 10° 6′ N., lon. 117° 26′ E.

Other Shoals. At a small distance to the northward of the Bombay Shoal there appear to be some additional dangers, seen by the Pennsylvania and other ships, which have deviated from the fair channel track; all these shoals on the outside of this track are steep to, having no soundings near them.

Palawan Island. PALAWAN, or PARAGUA, formed mostly of high land, with several remarkable hills, is a narrow island, but of great length in a N. E. and S.W. direction; the S. W. end being in lat. 8° 24′ N., lon. 117° 14′ E., by the survey of Captain Ross, and the north end in about lat. 11° 30′ N., lon. 119° 37′ E. A cluster of low woody islands stretches from its south-western extremity to the Island Balabac, with intricate channels between some of them; and the northern extreme is encircled by a chain of small isles: both the eastern and the western coasts are also fronted by small islands or shoals in many places, which render the navigation dangerous in the night, for some of the shoals are five or six leagues off shore.

Ooloogan Bay. Ooloogan Bay, on the western coast, is formed by rugged high land on the east side the entrance, and by several islands to the westward; the entrance is in lat. 10° 12′ N., and the course leading into the bay is South, in 35 fathoms water, decreasing to 22, 20, and 18 fathoms off the south point of Harbour Island, situated near the middle of the bay, where a ship might occasionally run for shelter in blowing weather. There is a passage on either side Three Peaked Island, which is the small island outside the entrance of the bay.

Captain Creighton, of the ship Cordelia, visited Ooloogan Bay in 1836, and the following are his remarks:* " Anchored under Harbour Island in 18 fathoms, the island bearing N. by W. This bay is represented in the charts as full of islands; I could find none but Harbour Island and two small rocky islets; one at the bottom of the bay, and one on the east side. Harbour Island is connected with the western shore by coral reefs. To run into the bay, pass on either side the Three Peaked Island, and on the east side of Harbour Island (which is about 2¼ miles in length, North and South, and not more

* See Naut. Mag. for 1837, p. 569—also Capt. Creighton's sketch of the bay in vol. 1839 of the same work.

than 100 yards wide at any part), and anchor from half a mile to $1\frac{1}{2}$ miles from its south end, shutting in the entrance by bringing the south end of Harbour Island on with the east point of the bay; but do not stand higher up, the bay being formed of a bed of coral rocks, with from 5 fathoms to 2 feet water on them, and the whole of the shores of the bay are lined with coral reefs. We saw no trace of any inhabitants. Plenty of timber, and from the mountainous shores, water may no doubt be found. There is an inlet to the westward, just below Harbour Island, of 5 or 6 miles in length, with 18 fathoms between the coral banks, but not more than half a cable in width from reef to reef, and another at the top of the bay to the S.W., having the appearance of a river. The shelter is admirable; though blowing fresh, the water was perfectly smooth. In standing out of the bay with a light S. E. wind, intending to keep near the land to have the advantage of the land breeze, found a reef running out about 4 miles in a N. N.W. direction off Ooloogan Point."

There is a high Table Hill in lat. 10° 49′ N., situated on a peninsula, on each side of which a bay is formed; the entrance of the northern one, called Malampaya Bay, is about 9 or 10 miles to the northward of Table Hill, formed by numerous islands of various sizes, with a round island directly off it. Although narrow, the depths are 16 to 20 fathoms in the entrance, and also among the islands inside the bay, where there is a good shelter; here is also anchorage in lat. 10° 33′ N., amongst the northernmost of a group of islands; and between Malampaya Bay and the north point of Palawan, there is a good anchorage in several places, amongst the numerous islands that line the coast. Ragged Islands are in lat. 11° 15′ N., lon. 119° 21′ E. by chronometer. Ragged Islands.

Soundings extend from the coast in some places 7 or 8 leagues, in other parts only 3 or 4 leagues; but the inhabitants of this island being in a savage state, it is not visited by navigators, and seldom seen, except by those who adopt the passage to China or Manila by the coast of Palawan, late in the season. The western coast and the shoals fronting it, have, however, been examined by Capt. Ross, and the situation of the most dangerous shoals correctly ascertained.

SEA HORSE BANK was examined by Capt. Ross, March 10th, 1817; being that day, at noon, in lat. 10° 51′ N., steered West $8\frac{1}{4}$ miles till 3 P.M., when we perceived the water suddenly discoloured, had 10 fathoms, next cast 8 fathoms, fine white coral sand, then anchored in 10 fathoms on the Sea Horse Bank; sent two boats to sound, and at the same time Capt. Crawford stood to the westward in the Investigator, to examine the bank in that direction. The boats could obtain soundings to the northward of our station, only at a short distance, and the least depth was 8 fathoms: to the S.W. they carried soundings about 2 miles, gradually deepening from the ship into 28 fathoms, and afterwards no ground: to the S. E. soundings did not extend above a quarter of a mile from the ship. The Investigator steered W. by N. about 2 miles from the Discovery at anchor, and never had less than 10 fathoms water. At 6 P.M. weighed, and steered to the eastward in soundings of 12, 9, 10, 13, and 25 fathoms, afterwards got no ground at 37 and 45 fathoms. The ship's station on the bank was in lon. 117° $55\frac{1}{2}$′ E., or 4° 23′ East of Macao, and 2° 9′ 42″ West of Goat Island off Manila Bay, by two excellent chronometers. The bank was estimated to be about 3 miles in length in an East and West direction, and not quite so broad. Sea Horse Bank.

Captain Pearson passed over this bank in November, 1833, in the Lady of the Lake, and found less water than mentioned above, for he had $6\frac{3}{4}$ fathoms in one place, and there appeared to be rather less on some of the neighbouring coral patches.

Directions for sailing between the shoals, by the Palawan Passage.

SHIPS which proceed by the PALAWAN PASSAGE to China must be very careful when passing between the shoals; for cloudy weather, with rain at times, will probably deprive them of observations in September, October, and November, when strong S.W. winds and gloomy weather often prevail near the S.W. end of Palawan. They should conform to the directions given for the passage through the China Sea to or from Canton River, page 294. If they adopt the channel betwixt the Louisa and Royal Charlotte Shoals, which is the best, lat. 6° 40′ N. is the proper track with a fair wind; this track leads in mid-channel; although either shoal may be approached with a steady breeze in the day, observing to keep nearest to that which is on the windward side, and, with a commanding wind, it may be advisable to get a sight of one of them, if not certain of your longitude. Having passed the Royal Charlotte Shoal, an E. by N. course should be steered about 20 leagues; but if the Louisa Shoal has been seen, steer E. N. E. from it about 30 leagues, then more to the north-eastward to make the Island Balabac, and pass it at 8 or 9 leagues distance.

The most intricate part of the passage is abreast the S.W. part of Palawan, between the Half Moon, Royal Captain, and Bombay Shoals in the offing, and those nearer the coast, which are very dangerous. The outer shoals are distant about 13 or 14 leagues from the S.W. part of Palawan, and the INNER SHOALS begin in lat. 8° 27′ N., lon. 117° E., abreast the S.W. end of this island; they consist of numerous shoal patches, or detached reefs or breakers, extending in a north-easterly direction parallel to the coast, at the distance of from 4 to 6 leagues. PARAQUAS, one of these reefs, is of circular form, nearly 3 leagues in diameter, having gaps through it, and a patch of breakers several miles outside: this outer patch is in lat. 9° 10′ N.,* and 5 or 6 leagues off shore. In lat. 9° 54′ N. lies another reef, called YORK BREAKERS, about 6 or 6½ leagues off shore, seen by the York; and most of these inner shoals have soundings *very near* to their outer edges, which will shew their proximity if the lead be kept *briskly* going in the night; but if soundings are got, haul off immediately, as some of the dangerous patches are close on the edge of soundings.

Inner Shoals.

Paraquas.

York Breakers.

Captain Ross, in the Discovery, March 12th, 1817, at noon, observed the lat. 9° 55′ 24″ N., then in 58 fathoms water, with the York Breakers bearing E. S. E., distant half a mile. He made Long Point in lat. 9° 39′ N., lon. 118° 21¾′ E., by good chronometers.

Long Point.

Between the *inner shoals* and the coast, there is a channel with soundings, but it is seldom used; being rather confined by other shoals scattered along the coast, the *outer channel* is preferable. This is 8 or 9 leagues wide in the narrowest part, and when

* There appears to be another patch of breakers in lat. 9° 6′ N., lon. 117° 21′ E. to 117° 23′ E., by the journal of the Scaleby Castle, which ship, after having seen the land of Palawan, October 26th, 1827, saw breakers at 2½ P.M. 1½ miles distant, on the lee-bow; wore and stood S. S.W. in irregular soundings, from 31 to 44 fathoms; at 4, tacked to the N.W., then saw another reef bearing W. S.W. 3 or 4 miles. The swell and current setting the ship to leeward, she could not clear the shoals, and the depth decreasing fast, she anchored in 25 fathoms, with the chain in rocky ground, the shoal first seen bearing from N.W. ½ W. to N.W. by N., about 1½ miles, and the other shoal S.W., distant about 4 miles. The situation at anchor, by observation of four stars, was lat. 9° 4′ N., by noon observations of the sun, on the 27th, lat. 9° 5′ N., lon. 117° 21′ E., by chronometers, and 2 miles more easterly by cross bearings of the land. With the prevailing W. S.W. winds and squally weather, there was no chance of clearing these shoals to windward, and the sea appearing clear betwixt the N.W. breakers and the Paraquas, weighed on the following morning, keeping a good look-out, and fortunately succeeded in obtaining a passage without meeting any new dangers, the soundings being irregular (from 40 and 50 to 25 and 19 fathoms). The chain and anchor-stock were much rubbed, and one fluke broken off by the rocks, by which it may be inferred, that the ship could not have rode with a hemp cable in the above-mentioned dangerous situation.

past the Bombay Shoal, it is at least 12 or 14 leagues wide, betwixt the York Reef on the inside and the shoals in the offing, seen by the Pennsylvania and other ships. There are six and seven patches bearing on the charts the name of the Pennsylvania, all of them more or less doubtful in position.

Pennsylvania and other shoals.

The best track to preserve in sailing through the channel is to keep 9 or 10 leagues off the S.W. part of Palawan, to give a berth to the inner shoals, which consist of numerous dangerous patches in this place, and to keep at this distance until clear of the narrowest part of the channel; afterwards, if 10 or 11 leagues' distance be preserved from the coast, it will carry you in the fair channel, clear of the shoals. Attend then to the directions previously given, and referred to above, for farther guidance in proceeding along the coast of Luzon, towards Canton River. This passage, although intricate in unfavourable weather, seems preferable to an eastern passage in October, or early in November; and during the whole period of the North-east Monsoon it might be pursued occasionally by fast-sailing ships, when bound from Singapore Strait to China. The Royal Bishop and York got sight of Balabac, November 1st, 1786, and reached Macao on the 30th, by this passage. The London got sight of Balabac, October 28th, the same year, stopped eight days at Sooloo, and did not reach Macao until January 9th, 1787, by the Eastern Passage.*

Additional Directions.

Captain Philip Maughan, coadjutor with Captain Ross during the survey of the Palawan Shoals, recommends ships working through the Palawan Passage to tack the moment soundings are got on the coast bank, as very shoal water, and even breakers, are often seen on its western edge. Excepting where shoals and rocky spots exist, the bank was generally found to consist of soft ground; but on account of the former, it would be very dangerous to approach the coast in the night. In the day-time, an officer should keep a careful look-out from the mast-head, if you resolve to take shelter under Table Mountain Point, or Long Point, during blowing weather; but, if possible, it is advisable to continue working to windward. In running for the channel off the S.W. end of Palawan, the safest plan seems to be, to endeavour to reach lat. 8° 30′ N., lon. 116° 30′ E., at daylight; you will then probably pass the narrowest and most dangerous part of the channel before the following evening, if bound to China. Do not approach the Calamianes Islands, or Busvagon, in passing, without great precaution, as many shoal spots are scattered about their coasts.

WEST AND NORTH COASTS OF LUZON, OR LUCONIA, AND THE CONTIGUOUS ISLANDS.

Luban.

LUBAN, in lat. 13° 44′ N. (the centre), extending 3½ leagues nearly N.W. and S.E., is the largest island of a detached group that fronts the S.W. end of Luzon and the N.W. end of Mindora; it is high in the middle, but low at each extreme. The islands to the southward of it are high, and Amil, to the eastward of it, is a high conical

* The navigation of the Palawan Passage is farther illustrated in a preceding section of this work, entitled "Passage through the China Sea to or from Canton River," under the article Palawan Passage.

mountain. There is a passage between these islands and Mindora, and also a safe channel to the eastward of them, which is frequented by the Spanish ships, when going to or coming from the Straits of Manila. The northern part of Luban is lined by a reef, on which the Company's ship Regent was driven and wrecked, after having struck on one of the shoals off the S.W. end of Palawan, where she lost her rudder, October 12th, 1822; she afterwards lost a temporary rudder in a gale of wind off Manila Bay, in proceeding there for repairs.

Minerva Rock. Point Santiago.

THE MINERVA ROCK requires care in ships approaching the S.W. point of Luzon, called Santiago, or St. Jago, which point is situated in about lat. 13° 44′ N., lon. 120° 37′ E.: this rock seems not to have been noticed by navigators, until the Minerva, of Alloa, Captain J. Robertson, bound from Sydney to Manila, struck on it at 2 A.M. September 10th, 1834, although an American ship had been wrecked on it several years previously. It is said to be a coral rock, having 17 fathoms water near it, and bearing from Point Santiago E. by S. $\frac{1}{2}$ S., distant 4 or 5 miles.

Goat Island.

GOAT ISLAND, in lat. 13° 51′ N., lon. 120° 7′ E., or 6° 35′* East of Macao by chronometers, is the outer, or westernmost island of the Luban group, and its S.E. point nearly joins the N.W. end of Luban; it is a low, flat, woody island, with a reef of foul ground projecting from its north end. From Point Calavite, on Mindora, the west end of Goat Island bears N. 25° W., distant 9$\frac{1}{2}$ or 10 leagues; there is a bank about mid-way between this island and the south point of Manila Bay, having on it from 9 to 15 fathoms water.

Manila Bay.

MANILA BAY, on the shore of which stands Manila, the capital city of Luzon, lies about 10 leagues to the northward of Port Santiago, and about 13 leagues to the north-eastward of Goat Island. It has been already described at p. 478.

Subic Bay.

SUBIC BAY (the entrance) is in about lat. 14° 42′ N., having an island in it, to the westward of which is the safe passage into the bay; but the passage to the eastward is intricate and lined by reefs. This bay stretches about 2 leagues inland, and forms two excellent harbours, one on the east side, and the other at the northern extremity, opposite the village of Subic; here, ships of any description may be sheltered from all winds in 7 to 10 fathoms, mud. About 2 or 3 miles southward of Subic Bay entrance lies the port or bay of Minangas, where small ships may anchor in 5 fathoms, sheltered from all winds excepting those at West and W.S.W.: the course into it is East and E. by N., about mid-channel between the points, to avoid the shoals projecting from them, and there are 4 fathoms, fine sandy bottom inside, within a musket-shot of the shore.

Minangas Bay.

Silangin Bay.

SILANGIN BAY, in lat. 14° 47′ N., is about half a mile wide at the entrance, and 2 miles deep, having tolerable shelter from all winds, but rather exposed to the N. W. and W. N. W. The south point is formed by a high, round, bare hill, with a reef projecting from it about a musket-shot to the northward; this must be avoided in steering East into the entrance of the bay, where the depth is 30 fathoms, decreasing gradually to the anchorage a little inside, near the beach on the south shore, which is the best berth. There is a stream of fresh water at the bottom of the bay. About 2$\frac{1}{2}$ miles

* Captain Ross, in 1817, made it 6° 33$\frac{1}{2}$′ East of Macao by good chronometers.

S. S.W. of the south point of this bay there are several rocky islets, called the Three Friars, with a coral reef projecting from them nearly a mile to the N. Westward; and between these rocks and the shore there are 40 and 42 fathoms water. Three Friars.

POINT CAPONES, in lat. 14° 52½′ N., lon. 120° 3½′ E., or 6° 19½′ East by chronometers from the Grand Ladrone, and bearing N. 3° W. from Goat Island, distant 20 or 21 leagues, is high, bare land, of reddish aspect, having two islands to the N.W. of it, about 2 miles distant; the outermost of these, called Great Capones Isle, is about one mile in length East and West, and nearly a league distant from the shore. About a mile outside of it the depth is 42 or 44 fathoms; from 40 to 35 fathoms are found within a mile of the shore, betwixt this part of the coast and the north point of Subic Bay, and generally from 45 to 50 fathoms about 3 or 4 miles off. From Mariveles Point to Subic Bay the coast is in general equally steep, and may be approached within 1 or 2 miles in some parts; but it is prudent to keep 3 or 4 miles from it, because rocks or foul ground extend out about half a mile or more from some points of land, and there are several indentations along this part of the coast, the chief of which is the Bay of Bagar, in lat. 14° 38′ N. Point Capones; adjacent coast.

PLAYA-HONDA, about 6 or 7 leagues northward of Point Capones, is formed of a small hill, projecting a little into the sea; and the fort is 2 miles farther northward amongst trees, by which it is not easily perceived. The coast between them is of moderate height, with a level space of considerable extent northward of Point Capones; but inland, the country is formed of high double mountains, one of which has a small sharp peak upon it. About 2 or 3 miles off the depths are 35 and 40 fathoms, and the shore is lined by coral reefs, stretching out nearly a mile in some places; about 1½ miles from the beach there is a small coral bank, bearing S.W. by S. from Playa-honda Fort, having 2 fathoms water, and close to it 10 or 12 fathoms. Playa-honda and neighbouring coast.

From Manila Bay entrance to lat. 15° N. the land is generally high and mountainous: here it begins to decrease in height; and near the sea to lat. 16° N. is not much elevated. There are several deep bays in the intermediate space, some of which are filled with shoals, projecting beyond the points that form their entrance.

THE TWO SISTERS, called in the Spanish charts the Two Brothers, in about lat. 15° 50′ N., are low woody islands, with a conspicuous sandy beach, the northern one being the larger, and distant about 2½ miles from the other. ADDER ISLAND, in about lat. 15° 55 N., and 4 miles northward of the North Sister, is small, with trees on it, and a sandy beach. These islands have shoals projecting from them to S. E. and southward, nearly to the distance of a league in some places. It is prudent to give them a good berth in passing, for they are about 2 or 2½ leagues off shore, which is farther out than the position generally assigned to them.* Two Sisters, and Adder Island.

Matsinglo Point, to the S. Eastward of the Two Sisters, is united to the southernmost by a reef, having inside to the eastward the bay and town of Santa Cruz, or Matsinglo, which is frequented by the coasting vessels, and said to afford tolerable

* The ship Sir Edward Pellew, bound to China in October, 1806, ran upon the reef contiguous to the Two Sisters in the night, and was got off with difficulty. Passing them about 2 or 2½ leagues off in the Anna, we could not, at that distance, perceive the dangers.

A Spanish MS. chart places all these islands 5 or 6 miles farther South than stated above; and the same MS. places a shoal in lat. 15° 28′ N., about 2 leagues off shore, named Baxos Bagalagua, but its existence seems very doubtful.

shelter: the channel leading to it is on the north side of the northern isle, but narrow and intricate, being bounded by coral shoals, with no ground 60 fathoms a little outside the entrance. To the southward of Matsinglo Point lies the Bay of Marinloc, fronted by two islands; and Pulanguiain Bay, a little farther southward, has also an island off its south point.

Cayman Point. CAYMAN POINT, about 4 miles northward of Adder Island, has a reef projecting to S. S.W.; but the channel is safe betwixt the point and that island, having 30 fathoms water, and the point may be approached occasionally to 10 fathoms on the tail of the reef. This channel leads to the road of Tambove, which lies to the eastward of Point Cayman, and is open only to southerly winds: steering for the extremity of the beach, to the eastward of the point, the depths will be 12 to 15 fathoms, coarse sand and shells, near the termination of the beach; the water will then deepen, but until in soft mud it will be improper to anchor, for rocks are scattered over the bottom, where it consists of sand. Wood and good water may be got here.

Tambove Road.

Bolina Cape. BOLINA CAPE, in lat. 16° 26′ N., lon. 119° 52′ E., measured by chronometers from the Grand Ladrone, and bearing from Point Capones about N. ½ W., distant 31 or 32 leagues, is low, even land, covered with trees, and sloping gradually to the extremity, where it has a small rise and terminates in a bluff point, not discernible above 6 or 6½ leagues from the deck of a large ship. From lat. 16° N., or from Point Cayman nearly to this cape, the land is level, of moderate height and sterile aspect, with a steep beach fronting the sea, and may be seen about 8 leagues. The coast in this space is bold to approach, having no ground at 50 fathoms within a mile of it in many places; there are soundings near the beach in some of the small bays, where a vessel might anchor occasionally, but there is no safe place of shelter for large ships. Point Arenas is about 2½ or 3 leagues southward of Cape Bolina, and 2 miles to the westward, being the westernmost part of the coast; the land between it and the cape is level, and covered with trees. Point Valinasay, or Balinasay, is about a league S. Westward of Cape Bolina; and Valinasay Bay, formed between them, is full of shoals.

Close to Cape Bolina there is a low islet, and the land of the cape is separated from the main by a narrow channel, not visible in the offing. Were it not for the shoals fronting this channel and stretching nearly a league from the cape all round, shelter would be found inside from all winds; but the approach to it is dangerous, as a vessel may get entangled by the shoals before the entrance of this intricate port is discerned.

Lingayen Gulf. LINGAYEN, or PANGASINAN GULF, to the eastward of Cape Bolina, is very extensive, formed by the low land from that cape, taking a S. Easterly direction about 4 leagues; and then the Mongos-Mongos chain of islets and rocks, extending along it about 5 leagues nearly S. E. by S., lines the west side of the bay. As the coast from the cape and three islets are fronted by shoals projecting about a league, ships ought to give the north side of the cape a good berth in the North-east Monsoon; for a southerly current may be liable at times to drift them into Lingayen Bay, or near the shoals on its western side. About 1½ or 2 miles inside the high islet Cavalitian, which is the last of the Mongos-Mongos Chain, there is good anchorage in muddy bottom, at the entrance of a small port, called Sual, into which a ship might be warped, should circumstances render that necessary.

The Gulf of Lingayen is about 9 or 10 legaues deep, and nearly the same breadth

across the entrance, from Cape Bolina to Point St. Fernando, or Balanac. Lingayen River, a place of some trade, is situated at the bottom of the bay, into which the small coasting vessels can pass over the bar. The rivers St. Fabian and St. Thomas are farther eastward, the former directly in the S. Eastern angle of the bay. Point Napacmac, or Namapacan, situated about 4 leagues to the northward of Point St. Fernando, forms the western extremity of the Bay of Napacmac, which extends about 3½ leagues to the eastward of the point. Point St. Jago is about 7 leagues northward of Point Napacmac, and a few miles northward of it, Point Esteran forms the South extremity of the bay of the same name.

BIGAN ROAD, in about lat. 17° 35′ N., is sheltered from northerly winds by Point Dile, which projects far out to the N. Westward, but exposed to the southward and westward: the anchorage is near the shore, off the river, bearing about East, in 10 or 12 fathoms; the bank shelves suddenly off to no soundings. About a league inland to the E. N. E. of the road there is a *chasm* between two mountains, called Abra de Bigan, or Gap of Bigan, which is very conspicuous when viewed from the offing, and is a good mark to know this part of the coast. Between Point St. Fernando and this place there are several towns along the coast, which is bold to approach, there being no soundings within 2 or 3 miles off the shore: the country is formed of high double mountains, with low woody points to seaward in some places, and the direction of the coast is mostly North and N. by E. Bigan Road, and adjacent coast.

SOLON-SOLON BAY, about 4 or 5 leagues northward of Bigan Road, is sheltered from all winds but those that blow between S.W. and W. N.W.; there are good depths in it, and the reefs bounding the entrance, with a rocky bank in the mouth of the bay, will be seen in clear weather. The rocky bank has 1 and 2 fathoms on it, with a passage on each side of 9 or 10 fathoms water; but that to the northward, between it and the north point of the bay, is too contracted. The coast from Bigan Road to this bay should not be approached under 3 or 4 miles, for the Island Pingue, or Bantay, lies about 1½ miles off the projecting part of the land to the South of Solon-Solon Bay, surrounded by breakers and foul ground; and to the northward of it the coast is lined with coral reefs, stretching out a great way, as far as the entrance of Solon-Solon Bay. Solon-Solon Bay, and neighbouring coast.

SALOMAGUE BAY, adjoining to the northward of Solon-Solon Bay, is separated from it by a point of land encompassed with shoals: and West from this point, 1½ and 2 miles distant, are two rocky banks, with 4 fathoms, or probably less, water on them. This bay is more capacious, sheltered from the same winds, and deeper than the former. Salomague Bay.

The north point is also, like the southern one, encompassed with a reef, which stretches to the eastward along the northern side of the bay; and an island of moderate height is situated about three-quarters of a mile from the point, with a reef projecting off it about a cable's length to the S. Westward. This place may be known from the offing, by a chasm or gap in some high mountains, which overtop the rest of the chain on this coast: it resembles the Gap of Bigan, but it is not so large, nor does it approach so near the sea as that gap; it may also be seen bearing about S. E., when a ship is 4 leagues West of Salomague Bay. When the Gap of Salomague bears about E. ¼ S., an East course will carry a ship direct towards the island at the north point of the bay, which should be approached in a large ship bearing about East; Directions to enter it.

and the reef off its S.W. point ought to be passed close in 25 or 30 fathoms, mud, to avoid the rocky banks that lie to the westward of the south point of the bay; she may then steer right in the middle of the bay, rather inclining towards the northern shore, and anchor in 8 fathoms. Farther in there is a shoal spot, which will be perceived in clear weather by the discoloured water on it: the best berth to moor is in 6 or 7 fathoms, mud, opposite some rice magazines on the north shore.

Cape Bajadore; coast from Salomague.

CAPE BAJADORE, or BOXEADOR, in about lat. 18° 32′ N., lon. 120° 39′ E., by chronometers and lunar observations, is a low point of land, with a reef of breakers projecting about $1\frac{1}{2}$ miles, and it forms the N. W. extremity of Luzon. From Salomague Bay to this cape, the direction of the coast varies between North and N. N. E., to N. N.W. near the cape, by which a bight is formed to the southward of it, *said* to have anchorage near the shore; in some parts it is low and woody to seaward.

The chain of high mountains inland, which commences near St. Fabian in the Bay of Lingayen, extends parallel to the coast, gradually diminishing in height, and stretching more inland about 8 leagues to the southward of Cape Bajadore, leaves a spacious plain fronting the sea. Another chain of hills begins about $2\frac{1}{2}$ leagues from the shore, which stretches northward parallel to the coast line.

About $2\frac{1}{2}$ leagues northward of Salomague, at a place called Badoc, or Lugue, Sinay Isle lies, about half a mile off a point of land, surrounded by a reef; and the coast between these places is rocky, with breakers projecting from it about a mile.

Ilara Hummock stands near the sea, about 7 leagues southward of Cape Bajadore; being of middling height, with patches of trees on it, and there being no other of similar appearance, it is a good mark in sailing along the coast. Soundings are got about a league off shore from Salomague to Ilara Hummock, but from 1 or 2 leagues beyond the latter to Cape Bajadore, none are obtained at the distance of 2 miles from the shore; and the whole of this part of the coast is destitute of shelter for ships, and has rocky patches stretching out above a mile in some places.

From Cape Bajadore, the coast takes a N. E. and E. N. E. direction to Bangui Point, in about lat. 18° 39′ N., and distant from the former about 5 leagues.

Point Cavnaian, and the coast to Port Bangui.

POINT CAVNAIAN, or Punta Alto de Bangui, in about lat. 18° 40′ N., has a reef projecting about a mile out, and is the northernmost land of Luzon, distant about 7 leagues N. Eastward of Cape Bajadore; the coast between them, at one part, forms a considerable bay, with some rocky islets near the shore: and there is anchorage in the bottom of the bay, adjoining the small port of Bangui. The entrance of this port is between two points, with reefs projecting from them, and the course into it is S.E.; the depths were formerly 7 and 8 fathoms in it, decreasing gradually to 4 fathoms within a cable's length of the beach inside; but it is said that this port has been long shut up by an earthquake.

Point Caravallos, and the adjacent coast.

POINT CARAVALLOS is a bluff, steep point of white cliffs, bearing about E. by S. $3\frac{1}{2}$ or 4 leagues from Point Cavnaian, having a mass of high mountains contiguous, which go by the same name. Close to the point there is an islet, and others lie near the shore, about $1\frac{1}{2}$ or 2 miles to the eastward. About 4 leagues eastward from Point Caravallos there is a round hill, of middling height, called Pata Point, or Cabicunga, and the whole of the coast from Cape Bajadore to this place is steep, without any soundings until near the shore.

The land is of middling height, and in some parts rather low close to the sea, with several rivers; but the country inland is high and mountainous.

COAST OF CAGAYAN, from Point Pata to Cape Engano, forms a regular concavity, with a chain of mountains inland, and a considerable space of moderately elevated, or rather low land fronting the sea, which is interspersed with villages and intersected by rivers in several places. There is a continued beach along this coast, with regular soundings in general, 30 or 40 fathoms about 1½ or 2 miles off on the western part, and the same depths extend 3 or 4 miles off shore when farther to the eastward. The only danger known is a sand-bank, on which the sea breaks in blowing weather; this bank is about 2 miles N. by E. from the bar of Abula River, and fronting the point to the westward of the river, the west end of it bearing about South from the middle of the Island Fuga; it extends E. S. E. and W. N.W. about 2 miles, and about a mile outside of it there are from 35 to 40 fathoms water, over fine black sand. Coast of Cagayan.

The entrance of the Great River Tajo, about 4½ leagues eastward of Abula River, has good anchorage in 10 or 11 fathoms, about 2 miles N. N. E. from its mouth. The point on the S. E. side is known by the church and convent of the town of Aparri built on it; opposite to which, or North from the church, is the best anchorage, with the Volcanic Mountain on Camiguin bearing N. N. E. Easterly. The river is about one-third of a mile wide at the entrance, with 2 and 2½ fathoms on the bar, deepening to 5 and 6 fathoms, mud, inside. The coast to the eastward of this river is flat, with soundings of 20 to 25 fathoms, black sand, about 2 leagues off shore.

PORT SAN VIZENTE, about 8 or 9 leagues E. N. E. of Aparri, is formed by the small island of the same name, situated betwixt the N. E. end of Luzon and its adjacent island, called Palaubi, or the Island of Cape Engano. There is room in this port for three or four ships, sheltered from all winds; but the entrance is narrow and intricate, being formed between shoals on each side, which project from the S.W. part of Palaubi, and from the Island Vizente; a ship, therefore, is obliged to warp in. Port Vizente.

There is good anchorage in 5 fathoms opposite the mouth of the port, and sheltered from all winds but those that blow between West and S.W. There is also anchorage along the coast, betwixt Aparri Road and this place, in 15 or 20 fathoms within 2 miles of the shore; the soundings are pretty regular, excepting a hole in the bank about 3 or 3½ leagues to the S. Westward of Vizente, with 70 and 80 fathoms water about 2½ miles off shore, having close to the edge of it 30 fathoms, black sand. Anchorage.

CAPE ENGANO,* in lat. 18° 39′ N., lon. 122° 16′ E., by chronometers, from the Grand Ladrone, and by observations taken in 1802, forms the N. E. point of the Island Palaubi, and it is moderately elevated; the south point of the same island is a round hill, rather higher, and forms the east point of Port San Vizente. From the point that forms Cape Engano, a coral reef with high breakers, and several rocks above water, projects E. N. E. about 3 miles, and patches of shoal water stretch about a mile beyond it. Cape Engano.

This reef fronts the eastern side of the island, at the same distance; extending southward about 4 miles, until abreast the round hill that forms its south point, and joins to the N. E. end of Luzon.

* This name is sometimes applied to the N. Eastern extremity of the main land of Luzon, about 3 leagues farther to the S. Eastward, which is called Point Mauva by the natives.

Close to the northward of Cape Engano there are two islets, the outermost of which, called Lava, or Cape Islet, is a square steep mass of lava, about half a mile in extent, and may be seen 8 or 10 leagues.

This is the northernmost land of Cape Engano, and the channel between it and Camiguin is nearly 7 leagues wide, and clear of danger. As the currents set strong to the northward here, in the southerly monsoon, a ship proceeding from the coast to the eastward may pass within a mile or less of the north side of Lava Islet, and then steer E. N. E., which will carry her about a mile clear of the north end of the Cape Reef. It is proper, with light winds, to keep on this side the channel, to prevent being drifted to the northward by the currents near the Guinapac, or Didica Rocks.

ISLANDS AND CHANNELS BETWEEN LUZON AND FORMOSA; WITH BRIEF DIRECTIONS FOR PASSING THROUGH THE CHANNELS TOWARDS NEW SOUTH WALES.

Babuyan Islands.

THE BABUYAN, or FIVE ISLANDS, form a kind of circular chain, fronting the coast of Cagayan at a considerable distance; the channels between these islands are safe, without soundings, and their coasts are generally steep to.

Lapurip.

Lapurip, or Dalupiri, the westernmost of these islands, in lat. 19° 15′ N., lon. 121° 34′ E., is distant about 12 leagues N. Eastward of Point Cavnaian; it has a level appearance, extending about N.W. and S. E. 2 or 2½ leagues, and may be seen from 10 to 11 leagues' distance. About 1½ miles off the south point lies Rijutan Islet, with shoals projecting from it a considerable way to the southward; but the water is deep in the narrow channel, betwixt the islet and the south end of Lapurip. It is said refreshments may be procured at this island.

Fuga.

Fuga, or New Babuyan, in lat. 19° 1′ N., distant about 4 leagues S. Eastward from Lapurip, is lower, and of an even appearance; it extends East and West upwards of 2 leagues, and is nearly half that breadth, terminating in low land at the eastern part. There are irregular soundings along the S.W. side of the island, where a ship may anchor occasionally, and the port of Musa is formed betwixt the west end and two small islands adjacent, called Barrete and Mabag. The best channel is from the southward, between Barrete and the west point of Fuga, the depths being 14 and 16 fathoms outside, and from 9 to 12 fathoms in mid-channel.

Port of Musa.

The west channel betwixt the two islands is narrow, with soundings from 6 to 10 fathoms. The north channel is rendered more intricate, by a reef stretching half-way over from the N. E. point of Mabag towards Fuga, and the tail of this reef joining to the N.W. point of Fuga is a bed of rocks, with 5 and 6 fathoms water on it: this passage ought, therefore, not to be attempted unless in a case of necessity, and a vessel, to enter by it, must borrow pretty close to Fuga. Barrete Island has a reef to the westward and another projecting from its south point; water may be procured, but with difficulty,

some distance inland. In 1764, many wild cattle, horses, and plenty of guavoes, were found here.

The port of Musa, in lat. 19° 2′ N., is only fit to run into in a case of necessity; although sheltered from the sea, the bottom everywhere being coral rock, mixed in some places with a little coarse sand or gravel, a ship is liable to have her anchor broken by the rocks. The depths are from 17 to 12 fathoms in the middle, shoaling to 4 or 5 fathoms near the coral reefs that line the shores on either side, and the breadth of the port is not above three-quarters of a mile. The best anchorage is nearest the N. E. side of Barrete, in 14 or 15 fathoms, where the bottom is rotten coral and coarse sand; near Fuga it is all very rocky.

The tide rises about 5 or 6 feet, but is very irregular in time and direction. The London took shelter here, Nov. 3rd, 1764, and repaired in part the damages she had sustained four days previously in a Ty-foong, close to the eastward of Monmouth Island, in which she was obliged to cut away her mizen-mast, top-masts, and best bower anchor. Tides.

Calayan, in lat. 19° 28′ N., about 5 or 6 leagues N. Eastward of Lapurip, and 8 leagues N. by E. from Fuga, is formed of mountainous and uneven land, highest in the centre, with low gaps in some places. It extends nearly S. E. and N.W. from 2 to 3 leagues, is steep to, without any safe anchorage, and may be seen about 15 leagues: contiguous to its south part there are some rocks above water, which stretch out more than a mile; and about 1½ miles off the N. E. point there is an islet about a mile in extent North and South, called Panuctan. Calayan.

Wyllie Rocks were discovered by Capt. Wyllie, in the ship Dona Carmalita, August 11th, 1825, on his voyage from Calcutta towards the west coast of Mexico, and might prove dangerous to ships passing through amongst the Babuyan Islands in the night. These rocks consists of two clusters above water, with high breakers between them, the southernmost rock, which is the largest, bearing N. N. E., distant 4 or 5 miles from Panuctan, and the other cluster is about 1½ miles in a N. N. E. direction from the southernmost or largest rock. In passing Lapurip Island, had an observation, which made it several miles more to the northward than its place in the India Directory. Wyllie Rocks.

Claro Babuyan, or Old Babuyan, in lat. 19° 37′ N., about lon. 121° 54′ E., distant about 10 leagues eastward of Calayan, is the most northerly and highest of these islands, in extent about 2 or 2½ leagues. A reef projects from the west end of the island, on which part there is a volcano; betwixt the volcano and the mountains on the eastern part there is a concave curve in the form of a crescent, when viewed from the northward or southward; but when the island is seen at a great distance from the eastward, it appears as one round mountain, with a detached hummock to the northward. The south point is steep and rocky, with a black rocky islet about a mile off, in form of a sugar-loaf. Claro Babuyan.

Camiguin, in lat. 19° 4′ N., bearing about S. by W. from Claro Babuyan, distant 8 or 9 leagues, is a high hilly island, about 2½ or 3 leagues in extent from N. N. E. to S.S.W. The shore is lined with coral rocks in some places, having soundings of 30 to 35 fathoms about a mile off; and the land is low close to the sea, along the eastern and northern sides of the island. The southern part is formed of a high mountain, visible at 20 leagues' distance, which was formerly a volcano. To the westward of this mountain some steep white cliffs front the sea, about 2 miles to the southward of the south point of Port San Pio Quinto. This port is situated a little to the southward of the middle of the island on the west side, formed by a concavity in the land, about Camiguin. Port San Pio Quinto.

3 miles wide and $1\frac{1}{2}$ miles in depth, sheltered from the sea by the Island San Pio Quinto, which lies in the middle of the entrance. This island is high, about $1\frac{1}{2}$ miles in circumference, steep to seaward, and has on each side a safe channel leading to the port. The south channel is $1\frac{1}{2}$ miles wide, with 40 fathoms in the entrance, decreasing gradually inside; it is formed between the Island Pio Quinto and the south point of the port, which with an islet near it has the colour of iron, and a little to the southward there is a boiling spring of salt water.

The north channel, formed betwixt the island and north point of the port, is about a mile wide, with soundings fronting it of 28 and 30 fathoms, and 17 or 18 fathoms inside; but there is a patch, with only 6 and 8 fathoms rocky bottom, rather nearer the island than mid-channel. A coral reef projects about a quarter of a mile from the north point of the entrance; the bottom in the channels and in the port is mostly soft sand, with a little coral in some places, and the soundings decrease gradually to the shore around. The best anchorage is in 15 or 16 fathoms, to the eastward of the Island of San Pio Quinto, opposite a rivulet of fresh water, which bears E. N. E. from that island. The tide rises about 6 feet, and flows to 6 hours on full and change of moon. This may be considered the only place amongst these islands which is *tolerably* safe for a large ship; for the cables are not so liable to be injured as in Port Musa, in Fuga Island.

Tides.

Guinapac Rocks.

Guinapac Rocks, bearing E. by S. from the north point of Camiguin, distant 9 or 10 miles, consist of two rocks, like towers, one larger than the other, with some smaller rocks contiguous. There are no soundings within musket-shot of them on the outside; and between them and the nearest part of Camiguin there is a channel 2 leagues wide, which is clear on the island side.

Didicas Rocks.

Didicas Rocks, bearing N. E. $\frac{1}{2}$ E. from Guinapac Rocks 7 or 8 miles, and distant $4\frac{1}{2}$ or 5 leagues from the north point of Camiguin, are about 2 miles in extent N. E. and S.W.; they consist of four sharp-pointed rocks, much higher than the former, and when seen at a considerable distance appear like ships under sail. There are amongst them many rocks of various sizes, which render the approach to them dangerous in light winds; for the currents run strong to the northward, producing ripplings like breakers in the vicinity of and among these dangerous rocks, and there are no soundings near them where a ship could anchor in a case of necessity.

Bashee Islands.

THE BASHEE ISLANDS* consist of a chain of islands *mostly* high, situated to the northward of the Babuyan Islands, and extending from lat. 19° 58′ N. to lat. 21° 13′ N.; the channels among them are thought to be safe, free from *hidden* dangers.

Balintang Isles, and the contiguous channels.

Balintang, or Richmond Isles, in lat. 19° 58′ N., lon. 122° 14′ E., by chronometers, are the southernmost of those called Bashees, and lie nearly mid-way betwixt Claro Babuyan and the nearest Bashee Islands to the northward, called Monmouth Group. They consist of three small but high peaked islets or rocks, discernible about 9 leagues off, and are in one bearing E. by S. The westernmost is much larger than the others, and a hole is seen through it when bearing N. E.: they are steep to, and may be passed on either side at 2 or 3 miles' distance; but the sea beats furiously against them in blowing weather. They bear S. $\frac{1}{2}$ E. from the high mount on the north end of Batan Island, and about N. N. E. from Claro Babuyan; the channel between them and the latter is about 6 leagues wide, and the other to the northward about 5 or

* Bashee, Balintang, Batan, Sabtang, and Bayat, are native names.

5½ leagues wide. These channels are wider than any of the other passages among the Bashee Islands, and may be distinguished as the Great Passage, or Balinting Channel; it was frequently used by the Company's ships when they proceeded by the Eastern Passage to China.

Batan, or Monmouth Island, extends from lat. 20° 17½′ N., in a N. N. E. direction, about 3 leagues, the high mount on its northern extremity being in lat. 20° 23½′ N., lon. 122° 11′ E.,* by mean of a series of observations by moon and chronometers, taken in different ships. The rest of the island is of considerable height, and near the south end there is a small knob, called Pyramid Peak. There are several villages on this island, and anchorage on the east side; here Dampier anchored in 15 fathoms water, where he remained from the 6th of August to the 25th of September, 1687, and procured a large supply of hogs, goats, and sweet potatoes. There is also anchorage at Ivanna Bay, on the west side of the island, upon a bottom of white sand in 5½ to 8 fathoms, within rather less than a quarter of a mile of the village bearing E. by S. or E. by S. ½ S.; farther out the bottom is rocky, with small patches of white sand. The south end of the island has a reef of breakers projecting from it to a considerable distance. There are strong ripplings at times in the channels among those islands, with irregular tides; but the water does not rise above 4 or 5 feet at full and change of moon. The Révolutionnaire frigate touched twice at this island, found good anchorage, and all sorts of provisions very cheap, the price of a bullock being from one to four dollars. Batan Island.

Sabtang (called Monmouth Island by Dampier) is of middling height, about 3½ or 4 miles in length North and South, separated from the S.W. point of Batan by a narrow gut, which is *said* to afford a passage. Bashee Island is small, and rather low, excepting a hill on the southern extremity, where there is a village: it is separated from the west side of Sabtang by a channel about 1 or 1½ miles wide, in the southern part of which there are soundings from 20 to 12 fathoms, and 6 or 7 fathoms close to the shores on each side, the bottom mostly coral rock. The ship St. Jean Baptiste anchored here in 14 fathoms water, under the east side of Bashee Island, in August, 1769, and procured fresh water at a small rivulet inside the S.W. point of Sabtang. This is the only safe landing place, the shores of both islands being fortified by a reef; through some of the gaps in it, the boats of the natives can pass in fine weather. There are several pools of fresh water on these islands, and plantations of sugar-cane, Indian corn, and fruits of various kinds. Goat Island, about 1½ miles W. N.W. of Bashee Island, is also small and rather low, with some cultivated spots. The South ends of these three islands lie on a transit bearing N.W. by W. and S. E. by E. from each other; and with the large Island Batan, they form the Batan or Monmouth Group. These islands are well inhabited, and abound with bullocks, goats, pigs, fowls, &c., and on their western sides anchorage may generally be found near the shore. Sabtang. Bashee. Goat Island.

Grafton Island, or High Round Island, in lat. 20° 34½′ N., lon. 122° 4′ E., bearing N. by W. ¼ W. from the north part of Batan Island about 4 leagues, is small and steep to; the channel betwixt it and the latter is safe, through which the True Briton, Captain Clarke, passed in the night, June 14th, 1802; and the Vansittart, Capt. Dalrymple, passed through it in 1821. Grafton Island.

Bayat, or Orange Island, about 2 leagues N.W. of Grafton Island, is between 2 or 3 leagues in extent North and South, of an even appearance, without any considerable Bayat, and other Islands.

* Baron Wrangel (celebrated by his explorations of the Siberian coasts and islands, chiefly by travelling on the ice), in passing Batan in H. I. M. ship Krotky, 1827, made the high mount 1° 11′ 55″ East of Cavite, in Manila Bay, or in lon. 122° 8′ E.

hills, may be seen 13 leagues, and it is said to have anchorage near to its western side, where refreshments may be procured. Between Bayat and the North Bashee Islands there are two or three small islands, the positions of which are not so well ascertained as the others; but they all lie near the same meridian, forming a chain between the other islands, and there is thought to be no invisible danger near them. The channel betwixt these and the North Islands is 7 miles wide, and perfectly clear; the Arniston passed through it in 1797, and the Valentine in 1764.

North Bashees. THE NORTH BASHEES consist of one high island, in lat. 21° $3\frac{1}{2}'$ N., and two small but high islets N. N. E. of the former: the two latter are not visible so far as the other island, which may be discerned 13 leagues off, and they appear with round convex summits in some bearings, but the southernmost generally makes in the form of a peak. Between the two north islets and the other high one to the S.S.W. there is a channel, about $3\frac{1}{4}$ miles in breadth, through which the Royal Admiral passed, October 13th, 1801. The North Bashee Island is in lat. 21° 9′ N., lon. 122° 0′ E., measured from Macao by chronometers, by Captain Ross, the Company's Marine Surveyor. Some navigators make it 7 or 8 miles farther to the eastward.

Winds and weather. Ty-foongs, or tempests, are likely to happen in both monsoons, among the islands between Luzon and Formosa; and in general the weather is very unsettled in this part, with frequent strong gales. Shocks from earthquakes have at times been felt here, and also in ships near to both the East and West sides of Luzon.

Botel Tobago Xima. BOTEL TOBAGO XIMA (the centre), in lat. 21° 59′ N., lon. 121° 38′ E.,* by the observations of Captain Ross, bears from North Bashee Island N. N.W., distant 55 miles by the transit bearing, taken when both were in sight, the latter then bearing S. S. E., and the former N. N.W. It is a high island, 3 or 4 miles in extent, appearing in the form of a saddle, or with a gap in it when viewed from S.S.W. or N. N. Eastward, and may be seen 16 or 17 leagues from the mast-head. The high part of the island is crowned with trees, and it is well inhabited, having several large villages on the southern part.

Little Botel. LITTLE BOTEL TOBAGO XIMA, in lat. 21° $56\frac{1}{2}'$ N., is a small island of considerable height, with some bushes on it, about 2 or $2\frac{1}{2}$ miles distant to the S. Eastward of the southern part of the Great Island of this name; a reef projects from its south end about a cable's length or more, which is steep to, there being no soundings near these islands.

Gadd Rock. GADD ROCK, or CUMBRIAN REEF, distant $4\frac{1}{2}$ or 5 leagues South of Little Botel Tobago Xima, and lying in the fair channel betwixt that island and the North Bashees, appears to have been first seen by Captain Gadd, in the Swedish ship Oster-Gothland, January 12th, 1800, who thought it to be the Vele Rete Rocks. High breakers were seen on it, extending nearly East and West about a league, and several rocks appeared with their heads above water among the breakers; when in one with the east end of Botel Tobago Xima, the reef bore N. $\frac{1}{4}$ W., the body of Little Botel then N. $\frac{1}{4}$ E., and Captain Gadd made it in lat. 21° 45′ N. This reef was seen in 1808, by Capt. Purefoy, of the Charlotte; and by Captain Tate, of the Cumbrian, July 26th,

* La Perouse made its S. E. point in lat. 21° 57′ N., lon. 121° 52′ E., and I made it in lon. 121° 48′ E. by chronometers measured from lunar observations; but Captain Ross made the east point in lon. 121° $39\frac{1}{2}'$ or 121° 40′ E., and the North Bashee in lon. 122° 0′ E., as stated above, which is probably nearest the truth.

1809, when working out between the islands with a light easterly wind. This danger was also seen very distinctly by Captain Johnson, of H. M. Ship Cornwallis, as will appear by the following extract from the journal of Captain W. H. Smyth.*

"January 6th, 1808, being under double-reefed top-sails, going about 8 knots, at 10h. 50m. A.M., saw the Island Botel Tobago Xima bearing N. N.W., distant 8 or 9 leagues. At 11h. 50m. suddenly observed the water to break ahead, and soon after perceived rocks, on which we bore up, and passed to leeward of them, keeping them pretty close aboard. At noon the breakers on the rocks bore N. 47° E., distant $1\frac{1}{2}$ miles, observed lat. 21° 41′ N., which makes this reef in lat. 21° $42\frac{1}{2}$′ N., and bearing South from Little Botel Tobago Xima." Extract from Capt Smyth's journal.

The situation of this very dangerous rock has been correctly ascertained by Captain Ross, the Company's Marine Surveyor, who examined it June 9th, 1817. When on with the highest part of Little Botel Tobago Xima, it bore N. 2° W. by compass, and he found it to be about 100 yards in length; the boat had 2 fathoms water about the middle of the rock, which probably might have been near the time of high water, as Captain Gadd perceived some *points of rocks* amongst the breakers when he discovered this danger; for there is a considerable rise and fall of tide hereabout on the springs at times, affording sufficient cause to think that some parts of the rock must be level with the surface of the sea, or visible above the hollow of the waves at low water, when there is much swell. Capt. Ross's account.

By the observations of Captain Ross, Gadd Rock is in lat. 21° 43′ N., lon. 121° 41′ E., differing only half a mile in latitude from its position as stated above by Captain Smyth, and only 2 miles from the latitude assigned to it by Captain Gadd. Position.

To avoid this danger, ships should borrow towards the North Bashee Islands, which is the widest channel, or keep near to Botel Tobago Xima, and take particular care to avoid the mid-channel track. The variation in this channel, in 1808, was 0° 18′ Easterly. Variation.

VELE RETE ROCKS, or REEFS, in lat. 21° 42′ N., lon. 120° 52′ E., or 7° $19\frac{1}{2}$′ East from Macao by chronometers, measured by Captain Ross, is distant about 16 leagues to the westward of Gadd Rock, and bears about S. $\frac{1}{2}$ W. from the low S. E. point of Formosa, distant $4\frac{1}{2}$ leagues. This is a mass of rocks, several of them a little detached from each other, and even with the surface; some of them are above water, and may be seen 9 or 10 miles. The channel is safe betwixt this danger and the south end of Formosa, and about 4 leagues wide; but very turbulent ripplings are often experienced in this and the neighbouring channels, which Captain Ross observed to extend in a N. E. and S.W. direction, and running so high that the breakers resembled the sea beating furiously over a dangerous shoal. They were whirled round in these ripplings in the Discovery, and although previously sailing with a fresh breeze, were almost becalmed on entering into the ripplings. Vele Rete Rocks.

Ships passing to the southward of these dangers in thick weather, or in the night, should keep well towards the North Bashee Islands, making allowance for a northerly current, which is generally experienced in light winds and during the S. W. Monsoon. From lat. 21° 15′ N. to 21° 20′ N. is a good track to preserve, when passing

* Then a lieutenant in the Cornwallis, an officer of great ability in scientific pursuits, afterwards employed by the Lords Commissioners of the Admiralty on important surveys in the Mediterranean Sea, and of the harbour of Syracuse, which have been elegantly and accurately executed. He received the honour of knighthood from the king of Sicily, for the valuable services rendered to that monarch, whilst in the active performance of his professional duties for the benefit of navigation.

Island to the northward of Botel Tobago Xima.

between the Bashee Islands and Gadd Rock, in thick weather. Several ships, during light winds, have been drifted by the current between Formosa and Botel Tobago Xima; The Glatton and Canton were drifted close to a small island, in lat. 22° 39′ N., which is surrounded by breakers, projecting out to the N. Eastward a considerable way; this island is 14 leagues to the northward of Botel Tobago Xima, and 8 or 9 leagues distant from the east coast of Formosa.

FORMOSA AND THE PEHOE ISLANDS, WITH A BRIEF NOTICE OF THE LIEU-CHEW, THE JAPAN, AND OTHER ISLANDS TO THE NORTH-EASTWARD.

Formosa Island.

FORMOSA, or PAKAN ISLAND, called also TY-OAN, is about 70 leagues in length, extending nearly N. N. E. and S. S. W.; the land is generally high in the interior, but low in some places to seaward, with soundings near the shore, particularly on the western side. The southern part has on it a high double-peaked mountain, discernible at 20 leagues' distance in clear weather, from which the land slopes down, terminating in a low projecting point, called the South Cape of Formosa. This point is in lat. 21° 54′ N., lon. 120° 55′ E., by lunar observations and chronometers; bearing about W. ½ S. from the west end of Botel Tobago Xima, distant 13 leagues.

South Cape.

A reef is thought to project from it, for Captain Maxwell, in H. M. Ship Alceste, when passing between Botel Tobago Xima and Formosa, saw very high breakers, which he thought were upon a reef of sunken rocks, projecting to a considerable distance from the low South Cape of Formosa; the noise of the breakers was distinctly heard at the distance of 4 miles.

To the N. Eastward of the point there is a village and a harbour for small vessels; and there are, it is said, soundings near the coast on the west side of the point.

Lamay Island.

Lamay Island, about 13 leagues N.W. from the South Cape, and about 3 leagues from the coast, is in lat. 22° 19¼′ N., lon. 120° 27′ E., or 6° 55′ East from Macao, twice measured by four good chronometers, and in lon. 120° 28½′ E. by lunar observations, according to Captain Ross, who examined this island in the Discovery. It may be seen about 6 leagues from the deck, having high yellow cliffs to the westward and a small sandy beach to the eastward; it is about 2½ miles in length, and is inhabited by a few fishermen. To the westward no ground was got with 70 fathoms line, but about 3 miles to the eastward of the island a bank of soft mud commences, which extends off Formosa, having soundings on it from 15 to 26 fathoms. In steering from the S.W. point of Formosa, along the west coast, the Discovery had no soundings off the S.W. point until within about half a mile of the shore, then had 120 fathoms; and with Lamay Island bearing about W. N. W., got 30 and 40 fathoms on the mud-bank when about 1½ miles off Formosa, and passed between the island and the coast. At anchor in 15 fathoms, very soft holding ground, about 3 miles off the town of Pong-lieu, bearing N. 59° E., Lamay Island bore from S. 86° W. to N. 82° W., the N.W.

Formosa Western coast.

extreme of the coast, a small black hummock, N. 41° W., southern extreme of the coast S. 22° E. Pong-lieu town is very populous, and governed by a Chinese Mandarin; there is a good bazaar, and the inhabitants came off to the Discovery in catamarans, bringing refreshments for sale. From this place she worked to the westward, and anchored in 15 fathoms about 3 miles off the coast of Formosa, and 5 or 6 miles from Lamay Island, with the black hummock bearing N. 7° W., brow of Western Hill N. 26° W., a town near which there is a river or inlet and many boats at anchor bore N. 58° E., distant 3 or 4 miles, Lamay Island from S. 14° W. to S. 3° E., the S. E. extreme of the coast S. 35° E. In working across, as Lamay Island was approached, the soundings increased from 35 fathoms into very deep water, having 52 fathoms about a mile off Lamay, from the S. E. and eastern parts of which a reef projects to a small distance. From this last anchorage the Discovery steered about 4 miles to the westward, then got off the bank of soundings.

Ty-wan, or Ty-oan, in about lat. 23° 10′ N., lon. 120° 16′ E., formerly the Dutch settlement of Fort Zealand, has a table hill inland to the E.S. Eastward: this harbour will not admit vessels which draw above 7 or 8 feet water; the other inlets along the west coasts are also fronted by shoals; and from the entrance of the River Ponkan, in about lat. 23° 45′ N., sand-banks project 3 or 4 leagues into the offing. Ty-wan.

Hawan, or Lookaun Road, by the observations of Captain Rees, who visited this place lately, in one of the opium traders, is in lat. 23° 57′ N., lon. 120° 15′ E., measured by chronometers, in a run of two days from Ta-tuy Island off Chin-chew Bay, allowing the latter to be in 118° 43½′ E., as measured from Lintin Island, Canton River, in a run from thence of four days. Europeans have little intercourse with this island at present, excepting the vessels with opium from Bengal and Canton River. Lookaun Road.

The northern extremity of Formosa is in lat. 25° 18′ N., lon. 121° 34′ E., the N.W. point in lat. 25° 11′ N., lon. 121° 6′ E., the N. E. point in lat. 25° 11′ N., lon. 121° 56′ E., by chronometers. There is a group of three isles off the N. E. point, with a safe channel, about 3½ or 4 leagues wide, betwixt them and the point. Northern parts, isles adjacent.

Killon Harbour, or Kelang Taw,* situated in the middle of the bight, between the north and N. E. points of Formosa, appears to have been little known to European navigators, until Lieutenant G. Parkyn, R. N., in command of the ship Merope, of Calcutta, on a trading voyage, explored this inlet, and made a survey of the harbour, in September, 1824. The entrance of the harbour, which is about half a mile wide, may be easily known by the bold island Killon Khid, about 4 miles directly off it; and it is formed on the west side by high craggy land, and on the east side by a rocky island, with a few trees and shrubs in the centre. The soundings in the middle of the entrance are from 12 to 14 fathoms, decreasing a little towards the coral banks which line the shores on each side: a little way in, on the western side, there is a bight or cove, called MEROPE BAY, where the ship of this name lay ten days, and procured good water and refreshments. The anchorage in this bay is in from 8 or 9 to 5 fathoms, nearest to the coral bank that lines the north shore. The inner harbour, called KILLON HARBOUR by Captain Parkyn, is about a mile to the southward of Merope Bay, and the coral reefs project a great way from the shores on each side, in the space between them; the soundings decrease to 4 and 3 fathoms at the entrance of the inner harbour, which is at the S.W. corner of the inlet; the anchorage here is in 4 or 5 fathoms, sand and mud, nearly land-locked, and safe for small vessels, where the Merope lay Killon Harbour.

* Head or promontory.

12 days. Killon Town is about a mile to the S.W. of the anchorage, but the channel up to it is very shoal. At Killon Harbour the natives were civil, and the fresh water was found to be of good quality; but at Ty-wan and the S.W. part of Formosa the water procured by the Merope was brackish. Captain Blaxland lay 10 days here, in the Dhaulle schooner, in 1827, and found the natives very friendly.

Hoa-pin-su. HOA-PIN-SU, and TY-AO-YU-SU Islands, lie to the eastward; the former in lat. 25° 44′ N., lon. 123° 32′ E., the other about 5 or 6 leagues farther to N. E., and there are several clusters of rocks between them. These two isles are steep to approach. There is a rock, about 19 leagues E. by N. of Ty-ao-yu-su, marked "doubtful," in the chart of the east coast of China, the existence of which is now proved; it was seen by Capt. M. Quin, of H.M.S. Raleigh, on the 4th July, 1837, who gives the position of the ship 26° 8′ N., lon. 124° 5′ E., the rock then bearing S. ¾ W. It can be seen 12 or 14 miles from the deck.

Pehoe Islands. THE PEHOE PONGHOU, or PESCADORE ISLANDS, lie in a general direction, North and South, about 8 or 9 leagues from the western side of Formosa, between the parallels of 23° 8′ N. and 23° 56′ N. Several of the islands are chained together by reefs, and there is good anchorage under some of them, in moderate depths from 6 to 12 or 15 fathoms, with very irregular soundings of 20 to 40 fathoms around the whole. The largest island is in about lat. 23° 32′ N., lon. 119° 40′ E., nearly in the middle of the group: on its west side there is a good harbour, formed between it and Fisher Island, which fronts it on that side, and the channel to enter it is on the south side the latter. The large island is called Pehoe or Ponghou, having several villages, with a fort and garrison of Tartar soldiers, it being subject to the Chinese Government. The northern extremity of the group consists of islets, rocks, and coral reefs. Although they are 8 or 9 leagues distant from the west coast of Formosa, the channel is considerably contracted by the sand-banks which front that coast, and those of Ponkan River. The Pehoe Islands lie 45 leagues to the eastward of the Lamock Islands, Soundings. on the coast of China; and in this track, the soundings to the S.Westward of the former are very irregular, as overfalls, from 30 to 8 fathoms, are found upon some shoal banks in their vicinity. The Eliza got upon a bank, with 5, 6, and 7 fathoms regular High Island. soundings; and afterwards saw High Island, the S. Westernmost of the Pehoe group, in lat. 23° 14′ N., lon. 119° 26′ E., and found the bank to bear West from that island. There is also uneven ground and overfalls between these islands and Formosa, with an extensive bank of irregular soundings from 24 to 10 fathoms, the S. E. extremity of which is in lat. 22° 52′ N., lon. 119° 23′ E.

There is a patch of rocks lying about 10 miles S. E. by E. of the centre of Pehoe, with deep water close to them, and the old Dutch charts give a shoal about 14 miles N. E. by N. from Pehoe, on the parallel of Low Island (23° 48′ N.), and about 9 miles due East from it.

Captain Ross got on a bank of irregular soundings in lat. 22° 46′ N., lon. 118° 55′ E., extending to the southward of the Pehoe Islands, where they had 20 fathoms; and the least water found was on a ridge of coarse gravel, near to which the Discovery anchored in the night, and the boats found no less than 7 fathoms water; lat. 22° 51′ N. by an observation of the Pole Star, lon. 119° 1′ E. The ridges of coarse sand or gravel appeared to extend in a North and South direction, with fine sands between them.

The Discovery anchored in 13 fathoms, sand and shells, about 1½ miles off High

Island, with it bearing from S. 24½° E. to S. 79° E.; a town on the largest island, named Paukfoo by the natives, bore N. 35° E. distant about 8 miles. The Western Islands were two high black rocks, distant about 5 miles, bearing N. 37° W. There were many rocks visible to the eastward, and some shoal spots breaking between the vessel and the town.

High Island is inhabited and cultivated; it is of moderate height, flat at the top, with high rocky cliffs, and may be seen about 6 leagues in clear weather; from its western side a reef extends about a mile.

Whilst on the bank of soundings in the vicinity of these islands, tides were experienced setting all round the compass in 24 hours.

A CHAIN OF ISLANDS extends from Formosa in an easterly and north-easterly direction to the southern extremity of the Japan Archipelago, and are comprehended under two groups or divisions. Islands to the N. Eastward of Formosa.

THE PAT-CHOW, or EIGHT ISLANDS (commonly said to be 17 in number), form the westernmost of these divisions, being nearest to the east coast of Formosa; they are called MADJICOSEMAH ISLANDS by the inhabitants. The southernmost of them, in lat. 24° 6′ N., lon. 123° 52′ E., by chronometer, is a low, flat island, detached about 4 leagues from the others; and the western extremity of the large islands of the Pat-chow chain bears from it N.W. by N. 4 or 5 leagues; it is a high bluff point in lat. 24° 17′ N., lon. 123° 45′ E. About 4½ miles W. ½ N. from this point, lies Kumi Island, in lat. 24° 25′ N., lon. 123° 5′ E., nearly half-way between the point and Formosa, and is about 3 or 4 miles in extent: although so much detached from the others, this island may be considered as belonging to the Pat-chow group. Pat-chow, or Madjicosemah Islands.

The eastern extremity of the Pat-chow Chain, in lat. 24° 42′ N., lon. 125° 36′ E., is formed by Ty-pin-san, a large island, with a smaller one off its west end; these are fronted on the north side by an extensive reef, projecting about 5½ leagues from them. The Providence, surveying vessel, in 1797, was wrecked on the northern edge of this reef, in lat. 25° 6′ N., lon. 125° 11′ E. Between the eastern and western groups of these islands there is thought to be a clear passage: they are tributary to Great Lieu-chew. Captain Broughton, after the loss of his ship the Providence, was, with his crew, treated with great hospitality by the inhabitants of Ty-pin-san, who supplied their schooner with water and refreshments, to carry them to Macao.

THE LIEU-CHEW, or LOO-CHOO ISLANDS, lie to the north-eastward of the Pat-chow group, and consist of one large island surrounded by smaller ones. The large island is of considerable size, and well inhabited; a number of junks are employed trading to Japan and Amoy. This island was visited by H. M. ships Alceste and Lyra, in 1816,* when Lord Amherst went on the embassy to Pekin; and a survey of its coasts was made by Captain Basil Hall, of the Lyra, who found it to extend between lat. 26° 3′ and 26° 53′ N., and between lon. 127° 34′ and 128° 18′ E., being nearly 60 miles long in a N.E. direction, and preserving a tolerably uniform breadth of about 10 or 12 miles. The north end is high and bold, with wood on the top of the hills: the N. E. coast is also abrupt, but quite barren, and the N.W. side is usually rugged and bare. The S. E. side is low, with very little appearance of cultivation: the South, S.W., and western coasts, particularly the two former, are of Lieu-chew Islands.

* It was afterwards visited by Capt. Beechey, in H. M. S. Blossom, who made an excellent survey of Napa-kiang Road.

moderate height, and present a scene of great fertility and high cultivation; and here the mass of the population reside.

Napakiang Road.

Napakiang Road, in lat. 26° 13½′ N., on the S.W. side of the island, is formed by surrounding reefs, having two passages leading into it, one from the northward, the other, which is the best, from the westward; both have irregular soundings of 8 to 15 fathoms water, and the depths are from 11 to 9 fathoms to the anchorage in the road, which is a little more than a mile to the eastward of the outer reefs. The town of Napakiang is about a mile S. Eastward from the anchorage, and the king's palace about 1½ miles to the eastward of the town.

Port Melville.

Port Melville lies near the N.W. part of the island; the entrance of it is in lat. 26° 43′ N., formed on the eastern side by Herbert Island, and on the western side by the reef that fronts a peninsula which projects 5 or 6 miles to the westward, having a small isle, called Sugar Loaf Island, near its extremity; on the south side of the peninsula lies Deep Bay, having no soundings with 100 fathoms line in it, at a small distance from the shore. The entrance into Port Melville is about S. E. by S., along the western side of Herbert Island, until abreast of the S.W. point of this island, when two conspicuous round black rocks will be seen off the point forming the S. E. side of the harbour; the outermost of these rocks should be kept on with the top of a *distant double-topped hill*, bearing S. E. by S. till the harbour opens; then haul up about S. S.W., and steer close along the eastern shore, in 7, 6, 5, and 4½ fathoms. The village will soon shew itself on the western side, and when past the narrowest part a berth may be selected at discretion. The distant high hill, stated as one of the leading marks, is not the highest, but the second highest of the range.

Near the middle of the eastern side of Great Lieu-Chew there is a deep inlet, called Barrow Bay, bounded by shoals, and the S. Eastern coast is mostly fronted by isles and coral shoals, destitute of any safe place of shelter.

Tides.

The rise of tide is about 9 feet perpendicular on the springs; high water at 9 hours on full and change of moon. Variation of the compass, determined carefully with the transit instrument, was 0° 52′ westerly, in 1816.

The Lieu-chew Islands produce rice and other grain, and coarse tea; it is said they work copper mines: they are considered to be in some degree tributary to the Chinese empire.

To the northward of Great Lieu-chew, other straggling islands of the group or chain extend in a N. N. E. and northerly direction, to lat. 27° 34′ N.

The westernmost islands of the Lieu-chew division are in lat. 26° 10′ to 26° 20′ N., lon. 127° 8′ E., and there are other small islands about 30 leagues farther to the north-westward. A little to the eastward of a line passing from Lieu-chew to the southernmost of the Japan Islands there are others, four of which form a group, in lat. 29° 30′ to 29° 40′ N., lon. 128° 15′ to 128° 20′ E. Meaxima is a considerable island, nearly S.W. from Nanga-saque Harbour, and its central lat. is 31° 55′ N.

Japan Islands.

THE JAPAN ISLANDS form a very extensive chain, stretching from the south point of the Korea to Kamtchatska; they are but little known to Europeans, and our notice of them will therefore be confined to one or two of their most southern parts. The Island of Kinsui is the southernmost of the Japan group: on its western side is

Nanga-saque Harbour.

NANGA-SAQUE HARBOUR, in lat. 32° 44′ N., lon. 129° 52′ 7″ E.,* which is very safe,

* The above position of the centre of Nanga-saque City is by mean of 1,028 lunar distances taken in 1804, by Captain, now Admiral Krusenstern, and Dr. Horner, the astronomer, in the first voyage of circumnavigation performed by Russian officers. Captain Torry, in 1803, made this city in lat. 32° 45′ N., lon. 130° 15′ E.

the anchorage in 5 or 6 fathoms, being sheltered from all winds. From Cape Gotto, in lat. 32° 35′ N., lon. 128° 44′ E., the entrance of Nanga-saque Harbour bears E. by N. 51 miles, and from the easternmost of the Gotto Islands it is only about the distance of 10 or 11 leagues. Cape Nomo, the southern point of Nanga-saque Bay, is in lat. 32° 35′ N., lon. 129° 42½′ E., and there is a *false* entrance in lat. 32° 40′, which may be easily mistaken for the *true* one, and, although it really leads to Nanga-saque, might prove dangerous, having never been explored. The entrance of the harbour is also difficult to discover, owing to the proximity of the main land to the Island Cavallos, which forms the western shore of the entrance, so that it may easily be missed if you are not certain of the latitude, and do not keep a good look-out.

Captain Fleetwood Pellew, who touched at Nanga-saque in October, 1808, in H. M. S. Phaeton, gives the following instruction to strangers, who intend to approach, or to sail into the harbour.

"Those who are unacquainted with Nanga-saque Harbour should make the land to the northward in lat. 32° 47′ or 32° 48′ N., as the N. E. trade wind blows very constantly here the greater part of the year. Having made the land in this latitude, you may run along shore at 2 or 3 miles' distance, as it is steep and bold to approach, and by doing so it will be almost impossible to miss the harbour. Whereas, being doubtful of the accuracy of the charts, and not perceiving the separation of Cavallos Island from the main, we were nearly missing it in the Phaeton, and our mistake was discovered by seeing Dutch colours hoisted on the island as a signal, by the Japanese." Capt. Pellew's Directions.

"By making the land in lat. 32° 48′ N., you will be about 3 miles to leeward of some islands of rugged aspect, one of which is perfectly barren, and formed like a sugar-loaf, and the largest of them forms a high ridge of rugged rocks: from hence to the island at the entrance of Nanga-saque Bay there is no danger, and the course is S. E. about 9 or 10 miles. If close in with the shore, the southern extremity seen will be a high bluff point, with some rocky islets off it; this point is about 7 miles to leeward of the entrance, and was mistaken by us for the east side of the entrance, and in steering for it the real entrance was discovered: care should be taken not to fall to leeward, as the fresh north-east winds would render it difficult to beat back to the harbour."

"On the bluff point last-mentioned there is a watch-house with a curious roof; and on a small island, about 3 miles to the northward of it, there is another, but this is situated lower than the first; a third is on the middle of Cavallos, and here the Dutch colours were displayed. Attention to these marks will prevent any mistake, and a farther guide is a remarkable high hill at a considerable distance inland, having upon it a remarkable rise or hump, the land of square form, resembling a tower, and this hill is directly over Nanga-saque."

"After rounding the Point of Cavallos, Passenburgh, and several small islands near it, which form the *inner entrance* of the harbour, will be plainly seen; also a reef called the Bone Roaster, close to the islands on the western side; these must all be left to starboard, and the main land of Kinsui must be borrowed on, steering direct for the outer islet outside of Passenburgh, which islet is rugged and rocky, with a few straggling trees on it, which you may leave on the larboard hand, within half a cable's length, and will have no bottom with the hand-lead. There are also some islets on the other side, that cannot easily be mistaken for those off Passenburgh, which must

Captain F. Pellew, at the outer anchorage, in H.M.S. Phaeton, in 1808, near Passenburgh Island, with the city bearing about 4 miles, observed in lat. 32° 43′ 50″ N., lon. 130° 10′ E., by two observations of moon and stars, and about 129° 58′ E. by chronometers.

all be left on the larboard hand, and those on the eastern side must be left to starboard, there being no passage within them. When round Passenburgh, the town and harbour open to view; the latter turning suddenly to N. N.W., forms a deep and spacious bay. Passenburgh is a high, round island, covered with trees, resembling the English fir; to the eastward, nearly opposite Passenburgh, a small town will be seen in a paled enclosure."

From the outer anchorage, where the Phaeton lay, Passenburgh Island bore N. 77° W., distant three-quarters of a mile, and the city N. 44° E. about 4 miles.

This, and the Port of Firando, about 12 or 16 leagues farther to the northward, were formerly frequented by English ships; but Europeans have not been permitted to trade to these ports for a considerable period; excepting the Dutch, who have hitherto been indulged with the privilege of trading to Nanga-saque, and allowed to keep a mercantile resident there.* The Russian circumnavigator, Admiral Krusenstern, on his voyage of discovery, touched here and obtained a supply of provisions and refreshments. The variation in 1804 was 1° 52½′ westerly. High water at 7 hours 52 minutes on full and change of moon, rise of tide 10 or 11 feet, in April. *Tides.*

South Island, and other islands. SOUTH ISLAND, in lat. 31° 30′ N., lon. 140° 0′ E., by chronometer, lies a great way to the E. S. Eastward of Nanga-saque; it is moderately elevated, not of great extent, and is one of the southernmost islands of the Japan chain; but other straggling isles, very imperfectly known, stretch 4° or 5° more to the East and south-eastward, in lat. 30° to 31½° N.

The brig Nile, of Boston, Captain Forbes, in her passage from Canton to the Sandwich Islands, in August, 1825, passed two islands, the southernmost in lat. 25° 42′ N., lon. 131° 13′ E., and the northern one in lat. 25° 53′ N., lon. 131° 17′ E., by good observations and two chronometers. Captain Forbes saw also the high peaked rock, called Ormsbus Peak, which he made in lat. 29° 41′ N., lon. 140° 23′ E., and when within half a mile of this rock the Island Todos los Sanctos bore North.

Exclusive of many straggling islands, lying to the eastward and south-eastward of the Japan Chain, several of which have been seen and visited by the whalers frequenting those seas, there is also a large group of islands (the Bonin Islands), known to the Japanese, but hid from the knowledge of Europeans, excepting a few whalers, until Captain Beechey, in H. M. S. Blossom, explored part of these islands in June, 1827.

Bonin-sima. THE BONIN-SIMA, or ARZOBISPO ISLANDS, were found by this officer to consist of several groups, extending from lat. 27° 44½′ N., to 26° 30′ N.; but the southern limit was not exactly ascertained. The N.W. island of the northernmost cluster, called Parry Group, is in lat. 27° 43½′ N., lon. 142° 8′ E.; the cluster consists of small isles, pointed rocks, and very irregular bottom. *Port Lloyd.* Port Lloyd, in lat. 27° 5½′ N., lon. 142° 11½′ E., is on the west side of Peel Island, which is the largest island of

* The ship Frederic, of Calcutta, Captain James Torry, having a cargo selected for that purpose, touched at Nanga-saque, in September, 1803, with a view of opening a trade with the Japan Islands: this was not permitted, and, *of course*, the voyage proved unsuccessful, for Captain Torry was equally unfortunate in attempting to trade among the Lieu-chew Islands, although it had been supposed that the inhabitants of these islands were inclined to trade with foreign ships.

The English officers who some time since went from Batavia to Nanga-saque, on a voyage of commercial enterprise, when the former place was under the British Government, seem to have been much better treated by the Japanese than any Europeans had been for a long period before.

the chain. The entrance is conspicuous, being marked by a bold high promontory on the southern side, and a tall quoin-shaped rock on the other. The harbour is nearly surrounded by hills, crowned with trees of the palm kind, and almost every valley has a stream of water. Green Turtle abound in the sandy bays, with numerous sharks, and fish of several kinds are plentiful. At the upper part of the harbour, a small basin, formed by the coral reefs, is convenient for heaving a ship down if requisite; and this port is a very desirable place of resort for a whale ship. Caution, however, is proper in approaching these islands, as the current runs very strong among them, and their rocky shores are very imperfectly known, and are probably without any safe anchorage outside, as the depths are great at a small distance from the islands.

Passage from Macao towards the N.W. coast of America or to Australia.

SHIPS FROM MACAO TO THE N.W. COAST OF AMERICA or to AUSTRALIA, generally pass out between the south end of Formosa and Luzon, then to the southward of the Pat-chow and Lieu-chew Islands, sometimes getting a sight of these, or South Island, particularly when proceeding to the eastward in the North-east Monsoon. In this season, the passage is frequently very tedious, from the prevalence of easterly winds and blowing weather in the vicinity of those islands. Ships proceeding to Australia, when clear of the islands, are obliged to keep to the northward of lat. 30° N., to avoid the North-east Trade, and make up their easting; and as the trade wind often hangs between E. by N. and E. by S., so that no easting of consequence can be made in crossing it, they ought to get into about lon. 165° to 170° East, before they stand to the South of lat. 30° N., to enter the limit of the steady trade.

The Western Passage.

It therefore appears that much stormy weather will be avoided, and a quicker passage made to Australia, by ships which sail from Canton River between September and February, if they proceed through the China Sea, and pass to the eastward of the Grand Natuna, and by the Carimata Passage, along the west side of Borneo. From hence they should steer for the east end of Madura, and proceed to the southward through the Straits of Bally, Lombock, or Allass, of which the latter will generally be found the most convenient. When clear of these straits, every advantage must be taken with the shifts of wind to get to the southward; and as it generally prevails at this season between S. by W. and S. S. E., from thence to the limit of the steady S. E. trade, they may be obliged to run considerably to the south-westward, before they get through it, into a high southern latitude. But when this is accomplished, they will be enabled to run down the easting speedily, with westerly and variable winds. In March, or early in April, they may either proceed through Bass Strait, or keep to the southward, and pass round Cape Van Diemen at a moderate distance; because easterly winds frequently prevailing in Bass Strait, during these months, are liable to cause some delay to ships proceeding through it to the eastward; but at all other times Bass Strait ought to be preferred, when circumstances are favourable, being the shortest route.

PASSAGE THROUGH BALABAC STRAIT TO THE MOLUCCAS AND TO SOOLOO; ALSO THE SURIGAO AND EMBOCADERO PASSAGES, AND EAST COAST OF LUZON.

To sail through Balabac Straits towards the Molucca Islands.

SHIPS sailing from MALACCA STRAIT, in August or September, bound to Amboina, or to the Banda Islands, will probably make the best passage by proceeding on the south side of the Anambas and Great Natuna Island; then between the Royal Charlotte and Louisa Shoals, or to the southward of the latter, observing to give a berth to the shoals adjacent to the Borneo Coast. They must be careful, however, not to fall to leeward of Balambangan, for south-westerly winds and northerly currents prevail in August, September, and part of October. Having rounded the north end of that island and Banguey pretty close, and being clear of Balabac Strait, they should proceed through among the Sooloo Islands, and round the north end of Celebes, then by the Molucca Passage to the southward. If before September, they may keep to the eastward, and pass through Dampier Strait, or the Gillolo Passage.

If in an indifferently sailing ship the season become too late to adopt the Palawan Passage when bound to China, she may proceed through Balabac Strait, and on the south side Mindanao, into the Pacific Ocean, or by any other passage which seems advisable.

Balabac Strait.

BALABAC STRAIT, formed between the south end of that island and the north ends of the islands Banguey and Balambangan, has three channels; the two which are nearest Balabac are intricate, and are seldom used, the channel adjoining to Banguey being preferable. There is also a channel to the northward of Balabac Island, and another between the north end of Borneo and the islands Balambangan, Banguey, and Mallawalle; either of which, with proper care, may be used in a case of necessity.

Keeney Balloo.

In approaching these straits from the westward, KEENEY BALLOO, or KINIBALU, may be seen if the weather is clear;* it is a very high mountain, inland, on Borneo, in lat. 6° 3′ to 6° 7′ N., lon. 116° 40′ E., or 12° 5½′ E. from Pulo Aor, and bears S. 6° W. from the north harbour of Balambangan. When bearing to the south-eastward it appears in the form of a wedge, with the highest end to the westward, and has been frequently seen at the distance of 40 to 42 leagues. Tanjong Sampanmangio, the north point of Borneo, distant about 18 leagues to the northward of Keeney Balloo, is in about lat. 7° 3′ N., and 4 leagues S.W. of the south point of Balambangan.

Malloodoo Bay.

Betwixt that point and Tanjong Inaroontang, another point of Borneo, about 7 or 8 leagues to the eastward, the great BAY OF MALLOODOO stretches inland a great way to the southward, having regular soundings and moderate depths, with good anchorage in most places; but there is no inducement for a ship to touch here, or at any of the

* It has also been seen from ships to the eastward, when near Cagayan Sooloo. Capt. Ross made this mountain in lon. 116° 40¾′E.

bays on the N. W. or N. E. coast of Borneo, the natives being inhospitable and perfidious. The Mornington, at anchor in 9 fathoms, mud, about 2½ miles from the shore at the head of the Bay of Malloodoo, had Keeney Balloo bearing S. 23° W., and the extremes of the bay from N. 5° E. to N. 33° E. There is a shoal with only two feet water on it near the middle of the bay, about 6 miles from the nearest shore, which is not generally known. The variation in 1822, to the westward of Balabac Straits, in lat. 7° 10′ N., lon. 115° 30′ E., was 1° 25′ easterly.

Banguey Island.

Banguey is a considerable island, extending about 6 or 6½ leagues N. E. and S.W., having on the N.W. part near the sea a conical peak, which is a good mark near these islands, for it may be seen 14 or 15 leagues; it is in lat. 7° 19′ N., lon. 117° 6′ E., by chronometers. There are many islets contiguous to Banguey on the east, north, and south sides. Ships in want of water may pass to the southward of Balambangan, and anchor with Banguey Peak N. N. E., about 1½ miles off the mouth of a river bearing East, where fresh water may be got with facility, there being depth sufficient on the bar of the river for a long boat. This has been already mentioned in the note respecting the passage of the Alfred and True Briton, at page 297; but care must be taken to have the boats armed, for the crew of the Betsy schooner, after that vessel was wrecked on a shoal in the China Sea, in November, 1805, landed on Banguey in their boat, and escaped from thence with difficulty, the commander and part of the crew having been killed by a party of roving Malays, who at first pretended to be hospitable.

Balambangan Island.

Balambangan, or Balambang Island,* is nearly 5 leagues in length N. E. and S.W., separated at the N. E. part from Banguey by a channel about a league in breadth; the southern part of the island is pretty high, but it is rather low to the northward, and has two harbours on the east side. These harbours are lined by shoals, and several are scattered over the North Harbour, which is the largest; the shoals are generally visible from the mast-head in favourable weather. A settlement formed here by the English some years ago was surprised and cut off by the Malays; it was re-settled in October, 1803, but the establishment being expensive, without any prospect of real advantage, it was relinquished.

The south channel leading to these harbours is safe, with soundings mostly from 16 to 23 fathoms off the south end of the island, and betwixt it and Banguey; and the soundings continue regular when steering from thence to the southward into Malloodoo Bay, mostly soft bottom. The North Channel is narrow and intricate, bordered by shoals, with the Island of Mangoak nearly in the middle of it, which is surrounded by a reef, projecting a great way out to the S. E., North, and N. E.; this island is also called Tonier, or Tiger Isle; it is low and sandy in the centre, and on either side there is a passage. The passage betwixt it and Banguey has from 10 to 7 fathoms water in mid-channel; the other, contiguous to Balambangan, has from 7 to 5 or 4 fathoms, and either of them may be used occasionally, as the wind or circumstances require, but the Eastern Passage is considered safest. If obliged to work through, short tacks should be made, and a trusty person kept at the mast-head to look out for green water; this ought not to be neglected, in sailing through any of the channels in the neighbourhood of these islands.

Sailing Directions.

In working through the channel betwixt Tiger Isle and Banguey, the Mornington stood within a quarter of a mile of the latter, in some places, to 4 or 4½ fathoms water; she had 7 fathoms close to the edge of the reef that surrounds Tiger Island, and gene-

* By the Malays called Berobangan.

rally 5 fathoms in mid-channel. There are some shoal detached spots in the channel, which is narrowest when Tiger Island is on with the north part of Balambangan; then, overfalls may be experienced from 4 to 7 fathoms. After tacking in 5 fathoms on the Banguey side, she had overfalls, and grounded in 2 fathoms coral rock, with the N.W. point of Banguey bearing South, the Peak S. 61½° E., north point of Balambangan Harbour S. 49° W., off Banguey three-quarters of a mile. In passing through the other channel, betwixt Tiger Isle and Balambangan, the shoals will be visible on each side from the mast-head, when in mid-channel; and from the deck, when near them, if the weather be clear. Balambangan Island has a reef, dry at low water, projecting 3 or 4 miles off its north extremity, very dangerous to approach in the night, for the water deepens with overfalls in its proximity. The North Harbour of Balambangan is in lat. 7° 16′ N., lon. 116° 58′ E., or 14° 43′ E. from Malacca, by good chronometers. The best time to enter it is near low water, for the shoals are generally conspicuous at that time. Within half a mile of the south end of Balambangan, there are two small isles.

Balabac Island.

Balabac Island, bearing North from the opening between Banguey and Balambangan, distant about 10 leagues, is of considerable height, extending North and South nearly 5 leagues. A sharp peaked hill, in lat. 7° 59′ N., near the middle of the island, is the highest part; and near the south end, on the east side, there is shelter in a bay, called Dalawan, which has reefs projecting from the point that forms the entrance.

To sail through a north channel.

If a ship bound through Balabac Strait fall accidentally to leeward in the South-west Monsoon, and find difficulty in beating to the southward, towards the entrance of the *proper* strait, she may proceed through the passage to the northward of Balabac. Giving this island a berth of 4 or 5 miles, and having a distinct view of its north end, a small island will be seen, with a dangerous reef extending from its north end, in a N.W. direction between it and Balabac. Keep the latter about half a mile distant, and steer eastward for two isles nearly of equal size: off the north end of the southernmost there is danger, but as every fathom of decrease in depth may be discerned from the mast-head, if the weather is clear, an officer or some trusty person should be there to look out. Pass in mid-channel, which at first entering between these isles lies E. S. E., or S. E. by E.: when clear of them a group of islets will be perceived; do not approach these islets, for an E. S. E. ½ S. course with a leading wind, is as far to the southward as can be steered with propriety, until a ship has run 5 leagues to the eastward, after clearing the passage.* She may then haul to the southward at discretion, with the lead kept going, and a good look-out; taking care not to get to the eastward near St. Michael Shoals, which are in about lat. 7° 43′ N., steep to, and very dangerous.

The channel nearest to Balabac, on the south side, is by keeping near the reef that stretches along its south and south-west sides, until the southern extremity of the island bear about W. by S., then the course is East, between two isles surrounded by reefs, in a channel about 3 or 4 miles wide: but this channel is seldom used by any ship.

Soundings extend a considerable distance to the westward of Balabac: with the

* The ships Aurora and Commerce, part of a fleet with troops and stores, proceeding to form a settlement at Balambangan, fell to leeward, and went through this passage to the northward of Balabac, September 23rd, 1803. The Anstruther transport was wrecked upon one of the shoals to the north-eastward of Salingsingan Island, and many of the troops perished. The Thornhill, another of these ships, was wrecked on the reef that extends to the westward of the Mangsee Islands.

centre of the island bearing E. by S., and the north point E. N. E., distant 3 or 4 leagues off shore, H. M. S. Modeste had 22 fathoms; tacked and stood S.W. 3 miles, and had 10 fathoms; then stood S.W. 4½ miles, in 20, 25, and 30 fathoms at noon, with Balabac bearing from N. E. by E. to S. E. by E.

MIDDLE CHANNEL is formed on the north side by the two small isles Loomboocan and Candalamar, which lie to the south-eastward of Balabac, and the former or southernmost is sometimes called the Rabbit, and the other the Coney. This channel is bounded on the south side by the small isle Salingsingan, and shoals and reefs to the northward of it: there is a large reef several miles to the southward of Loomboocan, betwixt which and that isle is said to be the best passage; for there is another *intricate* passage to the southward of the reef, between it and the other dangers near to Salingsingan. *Middle Channel of Balabac Strait.*

This middle channel is now seldom used; although the soundings are generally from 17 to 23 fathoms, sandy bottom, ships are liable at times to experience sudden overfalls of 5 and 4½ fathoms, upon coral patches near the edges of the dangers that surround the channel.

THE SOUTH CHANNEL of Balabac Strait is *now* justly preferred to any of the others, having good anchoring ground from 18 to 25 fathoms, about 4 or 5 miles off the north ends of Balambangan and Banguey. It is bounded on the south side by a shoal and five islets adjoining the N. E. end of Banguey, the outermost of which is called Passage Island, or Goohooan. On the north side it is bounded by the two small Mangsee Islands, which are in lat. 7° 32′ N., lon. 117° 19′ E., distant 8 or 9 miles N. by E. from the N. E. point of Banguey; having a reef extending a little to the southward, and round to W. by N. and W. S.W. from the southernmost island, to the distance of nearly 3 leagues. The Salingsingan islet, or northernmost of the Mangsee Isles, is 3 or 4 miles northward of the other two mentioned above: these three isles are in a line bearing N. N. W., and seen to be connected by reefs. *South Channel.* *Mangsee Islands.*

If coming from the westward towards this channel or strait, be careful not to fall to leeward in the South-west Monsoon; soundings of 50 to 60 fathoms will be got about 11 or 12 leagues to the westward of Balambangan. The north end of this island and of Banguey, which bear about East and West of each other, should be approached within 5 miles, for there seems to be no shoal water beyond 2 or 3 miles of the north end of Balambangan. Steering E. by N. along Banguey, at the distance of 5 or 6 miles, the Mangsee Isles will soon appear bearing about E. N. E.: keep rather nearer to Banguey than to the reef that extends from these islands to the westward about 3 leagues, which is very conspicuous by its light green colour, contrasting the dark blue water around. The soundings through are regular, from 7 to 14 and 17 fathoms, over a corally bottom; and if the Banguey shore is approached within 3 or 4 miles, the water may probably shoal to 6 fathoms or less. *Directions to sail through the channel.*

When the Mangsee Isles bear N. N. E., and steering East, a small sand-bank, encircled by a reef, will soon be seen bearing about E. S. E.; it lies 2 or 3 miles from Passage Island, and ought to be passed on the north side at more than 2 miles' distance, in not less than 8 fathoms water.

Coming from the eastward, the Mangsee Isles should not be brought to the northward of N. N.W. until within 3 miles of them, then you may edge away gradually, giving them a berth of 2 or 3 miles; when they are brought to bear North, steer S.W. by W., which will keep you in a good channel between the reef on the northern

side and the Banguey shore, if not affected by oblique tides or currents. Proceeding along the Banguey shore at 5 or 6 miles' distance, when Banguey Point bears South, steer out to the westward, being clear of the dangers in the channel.

Passage to the eastward.

Having cleared this strait, if bound to China or Manila, late in October or November, or at any other time, steer eastward for the west coast of Mindanao, for the track near the east side of Palawan is little known, and thought to be interspersed with shoals. Therefore pass to the southward of the three small islands, called St. Michael, or Manookmanookan, Bangcawang, and Bancooran, which extend from about lat. 7° 42′ N., to 7° 50′ N., lon. 118° 40′ E., and bear nearly north from Cagayan Sooloo. The extensive shoals which stretch 5 or 6 leagues to the westward of these islands, called the St. Michael Shoals, have many rocks appearing above water, and ought to be avoided; also Toob Bataha, in about lat. 8° N., which is a bank partly dry, with a contiguous rock, situated about 15 or 16 leagues to the eastward of these three islands. Having reached the west coast of Mindanao, keep near it, and to the same sides of Negroes Island, Panay, Mindora, and Luzon, particularly if N. E. winds be expected to prevail.

St. Michael Islands and Shoals.

Toob Bataha.

To sail towards Cagayan Sooloo.

Ships bound to Sooloo, after clearing Balabac Strait, steer to pass near Cagayan Sooloo, on the south side; but the course ought not to be more southerly than E. by S. ½ S., till 7 or 8 fathoms clear of the strait, because several ships have got upon shoal coral patches of 5 or 6 fathoms, when steering about E. S. E.; and nearer to the Borneo shore there are some reefs of rocks above water. With Banguey Peak bearing W. ½ N., distant about 8 or 9 leagues, the Fly, in 1796, shoaled suddenly to 4 fathoms, coral, and deepened fast to 22 fathoms, steering to the northward. Shortly after, she had 5½ fathoms on another patch of coral; so that a good look-out is indispensable in this track. It was probably on these banks that the Minstrel sounded, June 23rd, 1822; with Banguey Peak bearing W. ½ N., distant 7 or 8 leagues, she had 5 fathoms, then 17 fathoms no ground; steered W. N.W. 3½ miles, and crossed over another shoal, with Banguey Peak bearing West, in 4 and 3¾ fathoms, to 5, 9, 12, 15, 17 fathoms, then no ground.

Circumjacent isles.

CAGAYAN SOOLOO, in lat. 7° 0′ N., lon. 118° 36′ E., or 1° 30′ E. from Banguey Peak by chronometer, is an island of considerable size, and may be discerned at the distance of 7 or 8 leagues. There are several islets to the northward, and two to the southward near it, called the Mooleegee Isles, one of which has the form of a saddle, and is in lat. 6° 54′ N.; a ship may occasionally anchor near them, as they are safe to approach. Between the south end of Cagayan Sooloo and the two Mooleegee Isles, there is a safe channel, 5 or 6 miles wide. About 9 or 10 leagues to the southward of Cagayan Sooloo is the small island of Mambahenawan; and to the westward and S. Westward, there are soundings of 20 to 30 fathoms, contiguous to the small islands which are scattered along the coast of Borneo. There are several deep bays on the N. E. side of Borneo, with good anchorage in some of them. SANDAKAN BAY is one of these, and contains three excellent harbours inside: Bahalatolis Island, in lat. 5° 54′ N., forms the entrance, and has plenty of good spring water; these harbours will afford good shelter to any number of ships, in from 7 or 8 to 4 fathoms. The islands about the harbours abound with good water, and the surrounding country with teak, poon, and camphor trees, fit for ship-building; there are also rattans and bamboos; the tide rises 8 or 9 feet. The Sooloo people have a settlement here.

Sandakan Harbour on Borneo.

THE SOOLOO ARCHIPELAGO is that chain of islands which stretches across

from the N. E. point of Borneo to the island of Mindanao; the islands are numerous and the channels among them appear tolerably free from danger, and have in them exceedingly variable depths of water.

Pangootaran. with sailing directions to Sooloo.

Pangootaran, in lat. 6° 15′ N., lon. 120° 40′ E., bearing E. by S. $\frac{3}{4}$ S. from Cagayan Sooloo, distant about 44 leagues, is the N. Westernmost island of the Sooloo Archipelago; it being low and level, little more than the trees are visible above water. Having proceeded from Cagayan Sooloo, and approached the south end of Pangootaran, a good passage is found between it and Oobean, the next island to the southward, although without soundings; nor is any found in the direct track from Cagayan Sooloo. Keep nearest to Pangootaran in passing through, and from hence the Island Sooloo may be seen, the road of which is at the N.W. end of the island, and bears E. S. E. about 11 leagues from the south end of Pangootaran; but a S. E. by E. course should be steered past the small Island of Oosadda, which lies to the eastward of Oobean, and continued until within 4 or 5 miles of the land to the westward of Sooloo Town. This course is requisite to avoid the race of Takoot Kababawan, near the west point of Palleeangan Island, on the north side the channel, said to have only 4 fathoms water on it, with no soundings a little way to the southward. At noon the observed lat. 6° 15′ N., when a long reef of black rocks bore S. E. $\frac{1}{2}$ S., centre of Oobean S. by E. $\frac{1}{2}$ E., Oosadda S.W. nearly in mid-channel; this reef seems dangerous, extending about N. E. and S.W., and the rocks just appearing above water, with breakers on them at times.

Reef.

If sailing from Cagayan Sooloo in the evening with a fresh breeze, during the northerly monsoon, steer more northward than the direct course, to avoid the above-mentioned reef, as you are liable to have a southerly current; and do not run for Pangootaran with its south extreme East of you.

Captain Piddington remarks, that ships bound to Sooloo should be careful to give a berth to the steep, low shores of the adjacent islands, because a crank ship would risk being overset by the severe N.W. squalls, if she had not room to bear away from them.

Coming from westward, the proper channel is between Oobean and Pangootaran, and care is requisite to keep to the southward, during the South-west Monsoon, as the currents run strong to the northward along the west sides of these islands; much time might, therefore, be lost, working to the southward, if the south extreme of Pangootaran be not kept bearing to the northward of East: nor should large ships ever proceed through amongst the islands to the N. Eastward of Pangootaran, as rapid tides of 6 miles per hour prevail on the springs; and the *apparently* widest channel, between the north point of Pandookan and the south point of Koolasian, is barred up by a reef of black rocks, lying on a bed of white sand, having only from 6 to 9 feet water over the rocks, with 3 and 4 fathoms in the gaps between them. The gut between Pangootaran and Pandookan is very narrow, with deep water.

Tides.

SOOLOO ISLAND, from which the Archipelago is named, is high and of considerable extent; being about 35 miles in length, East and West, and from 5 to 10 miles in breadth; it lies near the centre of the Archipelago, on the meridian of 121° E.

Sooloo.

Sooloo Town, or Soong, in lat. 6° 1′ N., lon. 121° 12′ E., is the residence of the Rajah of the island, to whom all the islands of this archipelago are subject; including the large Island Basseelan, from which an annual tribute is collected in pepper, and other articles. The anchorage in the road is in 18 or 20 fathoms, on a loose sandy bottom, with the Sultan's house bearing S. 26° E., Mount Temontangis S. 26° W., Tulean

Rock S. 67° W., the S.W. point of Palleeangan N. 60° W., distance off the town 1½ miles. The bottom being indifferent holding ground, ships are liable to drive with N.W. squalls. Bullocks are plentiful, of good quality, and at a moderate price. Poultry and live stock of all kinds, with abundance of vegetables and fruits, may be procured; also wood and water. The inhabitants are a treacherous race, and must be carefully watched: it is not advisable to touch here in a small ship to procure supplies or to trade, unless well armed, and prepared to resist any attack that *may be* made by the natives. The fleet from China, in June, 1795, anchored in Toolyan Bay, near the east end of Sooloo, and watered there; then proceeded out by the Tapeantana Channel.

Supplies.

Takoot Paboonoowan Shoal.

If a large ship approach Sooloo Road from N. Eastward, care must be taken to avoid Takoot Paboonoowan Shoal, on which the Swedish ship Gustavus Adolphus struck in 1798, where she had only from 3 to 3½ fathoms, and injured her rudder; it is in lat. 6° 15′ N., distant about 6 leagues nearly N. by W. from the east end of Sooloo, and 5 leagues to the westward of the Duo Bolod, which are two high rocks, nearly mid-way betwixt Sooloo and Basseelan.

To sail from Sooloo to S. Eastward.

Departing from Sooloo Road, the best track when bound to S. Eastward is round the west end of the island, then leaving the high island Tapool and the low islands Talook and Kabingaan to the southward, and Pata with its contiguous isles to the northward. There are soundings mostly through this track, and anchorage between the islands, where a ship may stop tide occasionally; and it is safe working through in the night, if the weather be clear. There seem to be, however, some coral patches hereabout, for the Albion tacked on a rocky spot in 8½ fathoms, the rocks visible under the ship, with the south point of Pata bearing East, the S. E. end of the low island Talook, which lies to the N.W. of Kabingaan, S. E. by S., and the westernmost high land of Sooloo N. N.W.

Tides and currents.

The tides set fair through the channel, about E. S. E. and opposite, sometimes very strong; off the west end of Sooloo they have been found to set N.W. and S. E. in December, about 4 miles per hour. During the North-east Monsoon there is generally a N.W. or westerly current in the neaps, betwixt Sooloo and Basseelan, and in the track from thence to Balabac Strait. In March and April the current sets mostly to the eastward among the Sooloo Islands; but it sets to the westward at the same time, in the openings of the Philippine Islands, to the northward of Mindanao.

Betwixt several of the islands eastward of Sooloo there are safe channels, with moderate depths for anchorage; but if any of them are adopted, caution is requisite, for they are little frequented, and reefs project from some of the islands. August 18th, 1821, the Minstrel, Captain Barnes, having been set to the eastward of Sooloo by the current, passed through between Kapooal and Beeteenan, and had 12½ fathoms the least water in mid-channel.

Tawee-tawee Islands.

The Tawee-tawee Islands, forming the S. Western part of the Sooloo Archipelago, extend nearly to the Peninsula of Unsang, the extremity of which forms the N.E. point of Borneo. They consist of an extensive chain of islands, very imperfectly known, with several dangers among them; particularly on the Pearl Bank, called Tahow, which lies in about lat. 6° 44′ N., distant 8 or 9 leagues to the N. N.W. of Tawee-tawee, and 19 leagues to the westward of Sooloo. Great caution is indispensable, if a ship intend to touch at any of these islands; for, not long ago, some of the chiefs of Tawee-tawee enticed a ship to proceed there, under the profession of friendly intercourse; but she was soon assailed by these deceitful barbarians, and narrowly escaped being cut off by them.

Another chain of islands stretches from Tawee-tawee Islands and from Unsang, a great way out from the coast of Borneo; and the southernmost of them, called the Leegetan Islands, in about lat. 4° 20′ N. and 10 leagues off the coast, have several reefs and sand-banks around, without any soundings near them.

If a ship sail near these islands, or along the coast of Borneo, great care must be taken to keep a boat ahead sounding in the night. The Laurel, from China, bound to Batavia, proceeded by this track in July, 1787, and saw a rock about the size of a boat, with breakers on its west end, about 2 or 3 leagues to the northward of the small isles Baguan and Taganac, distant 8 leagues from the coast of Borneo. She endeavoured to work close round Unsang, but the winds being light, with a northerly current, obliged her to run along the north side of Tawee-tawee; she then passed between the two islands off its east end, called Sigboye and Tambagaan, in a channel 1½ miles wide, with soundings 15 to 23 fathoms, coral rock. When through, she steered E. S. E. to give a berth to a sand-bank extending northward from a Haycock Island, and passed out into the open sea between two other islands, least water 9½ fathoms in the channel. Breakers were seen projecting about 2 miles from the east end of the southernmost island, which lie to the westward of the channel.

THE SURIGAO PASSAGE, or STRAIT OF PANOAN, formed between Mindanao to the southward and the other Philippine Islands to the northward, and leading into the Pacific Ocean, is seldom used by any ship bound to China by the eastern passage: rapid tides *at times* among the numerous islands at the eastern part, where there are no soundings, rendering it exceedingly dangerous. Besides, it is in too great a latitude to be adopted late in the season, for the islands outside become a lee shore, when the North-east Monsoon sets in.* Surigao Passage.

If a ship proceeding to China have westerly winds when near the western part of this passage, and be carried into it by the current, she might venture in a case of necessity to proceed through, if October is not far advanced. To sail through it.

The coast of Mindanao, which is steep and bold, should be kept pretty close aboard, and a berth given to the two Murcielagos Isles, that lie near Point Galera; the course continues along the coast to the E. N. Eastward, between Mindanao and the islands to the northward. Of these, the nearest are Aliguay and Silino, two low woody islands, steep to on the south side; and the large islands to the northward will be seen, if the weather is clear. From Point Tagola, which lies to the southward of Silino Island, the coast trends to the southward of East, and forms several bays, but the course is about E. by N. 25 or 26 leagues to Camiguin: this is a high island, with a knob on its centre, that may be seen 20 leagues; and being situated near Sipaca Point on Mindanao, the channel is on the outside of the island. Having passed Camiguin, steer to the N. E. for the channel between the north point of Mindanao and Panoan, which is 6 or 8 miles wide, then haul round the S. E. point of Panoan, and proceed to the northward along the east side of the large island of Leyte, until a bluff point on it is brought to bear S.W. by W. ½ W. With this bearing of the point, steer on the opposite course or bearing, which will carry you through the channel into the ocean, between Linago or Passage Island to the southward, and Omonkon, Soloan, and two other small islands, to the northward; this channel is wide, and seems clear of danger.

* The Royal Captain, bound to China, went through this passage, and got clear of the islands, October 8th, 1762, and the London went through it in October, 1764; the former ship experienced rapid tides, at the eastern part of the strait, but the London did not, nor did she meet with any considerable difficulty or danger.

When passing through the channel between the north point of Mindanao and Panoan, two small woody isles will be seen, one of them ahead, and the other to the southward of it. Betwixt the latter and Mindanao there are soundings of 25 to 30 fathoms, and 15 to 10 fathoms very near the Mindanao shore. The Spanish village of SURIGAO, consisting of a few houses, is situated about 2 leagues to the southward of the small isle; and by hauling to the southward close along the coast of Mindanao, you may anchor in 14 or 15 fathoms, fine grey sand, with the village bearing S. by W., distant 1 or $1\frac{1}{2}$ miles. If it is brought to bear S.W. or more westerly, at the distance of 3 or 4 miles, neither anchors nor cables will hold against the tides, which run sometimes at the rate of 9 or 10 miles per hour, as experienced by the Royal Captain, at anchor here, in 1762.

Surigao village.

Anchorage.

Tides.

The Surigao Islands, which front this bay, form a compact chain, stretching from the N. E. part of Mindanao, in a northerly direction nearly to Passage Island, at the east entrance of the strait of Panoan. There is no safe passage between them, for the tide runs at the rate of 9 or 10 knots, with dangerous ripplings, in the two narrow guts formed between the southernmost of these islands and the south point of the bay.

Sailing directions.

Ships intending to stop at Surigao Road for water should, with the wind at southward or westward, carry all possible sail, taking care to haul close round Surigao Point, between the Sonth Woody Island and Mindanao, keeping this coast aboard until the village bear S. by W., distant $1\frac{1}{2}$ miles. In this situation, they ought to anchor in 15 fathoms, and not bring the village farther to the westward; here is a fresh water river; by observations taken in H. M. Ship Psyche, in 1809, Surigao village is in lat. 9° 47′ N., lon. 125° 25′ E. When going in, the small woody island may be passed at a quarter of a mile distance, but not nearer.

The propriety of keeping near the Mindanao shore, in proceeding to the anchorage at Surigao, will appear evident by the following remark, taken from a plan of that bay, constructed by Mr. C. Maitland, master of the Psyche.

Mr. Maitland's remarks.

Having no good directions, this ship did not keep Surigao Point and the Mindanao shore aboard, but passed to the eastward of South Woody Island, and finding the ebb tide running rapidly to S. Eastward, she was obliged to anchor in 40 fathoms. The cable immediately parted, and a second anchor was let go, which not bringing the ship up, she was obliged to cut; but in working against the strong ebb tide, she was horsed close over to the islands bounding the east side of the bay, forced again to anchor in 27 fathoms, where she lay two days blowing a gale at westward, with the rocks under her stern.

When the weather became moderate, she passed to the northward and north-westward, along the west side of the chain of islands, through an intricate channel, formed between the chain and N. E. island, which is a large island on the N. E. side of the bay. Here she narrowly escaped being lost upon a reef which projects from the west point of the island, and which lies directly East from N. E. island, and bounds the east side of *Psyche Channel.*

There is a shoal, with only 2 fathoms water on it, bewixt N. E. Island and South Woody Island, nearest to the former; but no ship ought to go outside of South Woody Island, for if she is obliged to anchor in deep water, no cables or anchors will hold against the tides.

The easternmost of the Surigao Islands, fronting the ocean directly East from the bay, has a reef projecting from its N. E. part, on which a Spanish ship was lost in 1808.*

* No ship should venture to pass through the Strait of Panoan, unless in a case of necessity, on account of the overwhelming tides. The ship Hydery, of Calcutta, returning from Hobart Town, and endeavouring to

EMBOCADERO, or ST. BERNARDINO STRAIT, called also the STRAIT OF MANILA, is formed between the south coast of Luzon and the numerous islands in its vicinity. Embocadero.

The Galleons from Acapulco usually passed through these straits; a brief description of the eastern entrance may be proper, in case any ships be disabled by a Tyfoong, or otherwise in distress, when proceeding to or from China by the eastern passage, and find it indispensable to run for these straits.

Cape Espiritu Santo. Cape Espiritu Santo, the N. Eastern extremity of Samar Island, is bold high land, that may be seen 12 or 14 leagues; and is in lat. 12° 40′ N., lon. 125° 38′ E.,* by mean of the observations and chronometers of several ships which made it when returning from China by the Eastern Passage. To approach the Embocadero. Ships steering for the Embocadero generally make this cape, which is proper with an easterly or southerly wind; but as the north coast of Samar extends nearly West from the cape, about 20 leagues to the entrance of Embocadero, it seems advisable to steer direct for that strait, if the wind be northerly, because several small islands are scattered along the coast, and with this wind it becomes a lee shore. Point Palapa, and its contiguous islands. A few leagues West from Cape Espiritu Santo is the PORT OF PALAPA, having 6 and 5 fathoms water inside, where there is a chain of rocks near the eastern part; the western part, according to the Spanish plan, seems safe. This port is formed inside the Island Batac or Batag, between it and the contiguous islands; there are two channels leading to the port, one on each side of Batac, but that to the westward seems the best, formed betwixt the reef that projects from the island, and another reef projecting from the adjoining Island of Cahayaga. The course in is about South, and the depths decrease from 18 or 20 fathoms at the entrance, to 8, 7, and 6 fathoms inside; good water is got on Laguan Island, which forms the S.W. side of the port. Anchorage under Laguan. About 4 or 5 miles S.W. of this port, there is good anchorage on the west side of Lagnan Island, near the village of that name, where a ship may anchor in 6 or 7 fathoms, betwixt it and the Samar shore, sheltered from East and N. E. winds, but exposed to N.W. and West.

To sail into the Embocadero. The entrance of Embocadero, formed betwixt the S. E. end of Luzon and the N.W. point of Samar, is contracted by a group of isles and rocks, which lie a little outside the latter. The Isle St. Bernardino is detached from these to north-westward, and on either side of it there is a passage with soundings of 30 to 50 or 60 fathoms. Close to St. Bernardino there is a small islet, and to the westward a group of isles and rocks will be perceived contiguous to the point of Luzon; the channel is between these and the islands Dalupiri, Capul, and others that lie to the southward; and then to the westward, between the north-east side of the island Ticao and Luzon.

Port and road of St. Jacinto. Port St. Jacinto, in lat. 12° 34′ N., is on the north-east side of Ticao, which is the first large island to the westward of the entrance of Embocadero, distant about 9 or 10 leagues from St. Bernardino. This place may be easily known by a building, with some round bastions, forming a kind of fort, which stands on a rocky cliff, the land rising in hills behind it. The anchorage in the road in 15 or 16 fathoms, sand and gravel, is little more than half a mile off shore, with the house or fort bearing S.W. $\frac{3}{4}$ W., a pyramid rock to the southward of it South, the points which form the entrance of the harbour W. by N. $\frac{1}{4}$ N., and W. by S. $\frac{1}{2}$ S., Sugar Loaf Hill on Luzon N. $\frac{1}{4}$ W., and the mouth of Sorsogon Harbour N. by E. $\frac{3}{4}$ E., distant about $4\frac{1}{2}$ leagues. Ships

pursue this passage in October, 1832, was drifted on one of the outer rocky isles by the dreadful whirlpools on the flood tide, which threw her on her beam ends, then swept her from that isle and laid her on another one adjacent, where she became a wreck.

* A Spanish Chart, said to be from good observations, places it in lat. 12° 34′ N., lon. 125° 12′ E.

may anchor in from 23 to 7 fathoms, but the bank being steep, it is proper, coming in during the night, to bring up as soon as possible after getting 26 or 24 fathoms, from which the water shoals quick to 4½ fathoms. There is very little stream of tide in the road, the rise is 6 feet, and it is high water between 6 and 7 hours on full and change of moon.

Tides.

The south point of the entrance of the harbour is fronted by a reef which stretches along shore to southward; and a reef projects out nearly half a mile from a point where there is a black rock, about a mile to the northward of the north point of the harbour's mouth. The latter is contracted by a reef on the south side, but the depths decrease regularly to 10, 8, and 7 fathoms, inside the port, where there is room for several ships; but the northern arm of it being very shoal, they are obliged to moor towards the south side, with the entrance partly open.

Watering place.

The watering place is about 2 miles to the northward of the road, in a pool 10 or 12 yards above high water mark; into which a small run descends through a valley among trees and bushes, and is not easily perceived; the water is good.

Supplies.

The Galleons used to touch at this place in their passage to and from Acapulco: good beef and tropical fruits, such as pine-apples and water melons, may be procured. About a league to the northward of St. Jacinto lies the bay or inlet of Tasdugan, having 10 and 12 fathoms water in it; and at the north-west end of the island, the bay or port of St. Miguel is situated, with 65 fathoms water in the entrance, and from 20 to 10 fathoms close to the reefs at the head of the bay.

Sorsogon Harbour.

Sorsogon Harbour, on the coast of Luzon, opposite the north end of Ticao, is said to be safe: Bagatao Island, which lies in the entrance, is connected with the east point by a shoal; the channel being betwixt its western point and the island of Malahumasan, which projects southward from the land on the west side the harbour. The soundings are irregular in the channel, from 7 or 8 to 12 or 14 fathoms, and nearly the same inside. Water is got on the east side the harbour, which is well sheltered from all winds: and about 2 leagues from the outer part of the entrance, it opens into a spacious lagoon or inner harbour, with soundings from 6 to 3 fathoms.

Fresh water.

Directions.

Having rounded the N.W. extreme of Ticao, the track through the strait is to the W. S. W. betwixt the south point of the large island Burias and the north point of Masbate, another large island to the southward. From hence, the course is nearly W. N.W., about 23 leagues, to the passage between the south end of the large island, Marinduque and the small island of Banton, and other islands that lie to the eastward of Mindora; which, with it, bound the channel on the south side. The passage continues to the westward betwixt the north coast of Mindora and the S.W. part of Luzon, leaving Green Island and Maricaba to the northward; then round point Santiago, the S.W. point of Luzon, and inside Amul and the Luban Islands, if bound to Manila Bay.

Minerva Rock.

In passing Point Santiago, the Minerva Rock must be avoided, distant 4 or 5 miles E. S. E. from this point, described under the article Luban, at p. 491.

Where soundings are found in these straits, the depths are generally too great for anchorage; but contiguous to the passage there are some small bays or ports, where vessels might anchor occasionally, exclusive of those already mentioned. Port Magna, at the middle of the N. E. side of Masbate Island, fronting the Island Ticao, is thought to be a safe harbour. St. André is a small port, fit for small vessels, on the west side the island of Marinduque, a little southward of the N.W. point. On the north side of Mindora, there is anchorage in some places opposite Green Island, the *best* of which is Calapan Road, S.E. of that island, and directly inside the Baco Isles.

Bays or harbours adjacent.

Batangas Bay, on the S.W. coast of Luzon, northward of the west end of Green Island, has a mud-bank lining the bottom of it, with 7 and 8 fathoms close to, and regular soundings in the N. E. angle of the bay. Here, the depths are 6 and 7 fathoms very near the shore, increasing to 35 and 40 fathoms about 2 miles off; and a little farther out, no ground. A ship may anchor in this part of the bay, opposite the convent of Batangas, where is a grove of trees. At the N.W. part of the bay stands the village and fort of Bawang, and the land to the northward is cultivated to the tops of the hills, which rise with a gentle acclivity. The land is high on the east side, and low on the west side the entrance of the bay, and no soundings are obtained until near the land on the east side, or until well in towards the northern shore. Batangas Bay.

THE EAST COAST OF LUZON forms a very great and deep bay, extending from about lat. 14° to 17° 30′ N. The large Island Catanduanes lies off the east end of Luzon, 16 or 18 leagues to the northward of the Embocadero Passage; its north end is in about lat. 14° 16′ N., and the south end in lat. 13° 38′ N., and about lon. 124° 16′ E. The coast of Luzon is, in several parts, fronted by coral reefs, with many islands interspersed along the southern part, betwixt the bottom of the Great Bay and Catanduanes. Although there are some bays or harbours fit for small vessels, they are little known, and seem intricate to enter. Large ships ought not, therefore, to approach this coast in the North-east Monsoon betwixt Cape Engano and Catanduanes Island, to prevent being embayed; for if by any accident they fall to the westward near Cape Espiritu Santo, when proceeding by the Eastern Passage to China, they should endeavour to regain sufficient easting with Embocadero under their lee, and to steer for it, in case of necessity; or push through it and the Straits of Manila, and afterwards proceed along the west coast of Luzon to the northward, at least as far as Cape Bolina, before crossing over for the coast of China. East coast of Luzon. Catanduanes.

The places on the east coast, affording anchorage, or tolerable shelter from north-east winds, are Davilican Bay, a little southward of lat. 17° N., and Casiguran Bay, about 23 leagues farther southward. Also close under the west side the Island Polo, which is in about lat. 15° 8′ N., distant 12 or 14 leagues southward from Casiguran Bay; there being soundings betwixt the island and the main; and directly West from its south point there is an inlet into a harbour for boats, having 1½ fathoms in the entrance, and 3 or 4 fathoms inside. This part of the coast betwixt Polo and Alabat Island, 7 or 8 leagues more to the southward, is called Lampon Bay. Places affording shelter.

St. Miguel de Naga, about 16 leagues westward of the north end of Catanduanes, is a large bay, with several islands fronting the entrance, and a reef surrounding the east point; it is *said* to have anchorage and shelter from most winds. St. Miguel de Naga Bay.

Port Seesceran, in lat. 14° 20′ N.,* about lon. 123° 40′ E., situated about 8 leagues eastward of the entrance of the bay last mentioned, and about the same distance westward of the north-west end of Catanduanes, is a safe harbour, sheltered from sea by a group of islands, of which the largest fronting it is called Quinalazag or Ticos. The entrance is close round the east point of this island, the channel being bounded by small isles, and an extensive reef to the eastward. From 30 or 40 fathoms outside, the depths decrease, steering South into the entrance of the port, to 15 and 12 fathoms; and when round the east point of the Island Quinalazag, a ship should haul to the westward, and anchor under it in 7, 6, or 5 fathoms water, where she will be sheltered from all winds, and have the village Bahi, on the Luzon shore, opposite to her. The Port Seesceran.

* Some accounts place it much farther to the southward.

peaked mountain Ysarroc stands on the inner part of the peninsula that separates the bay of St. Miguel de Naga from Port Seeseeran, about 3 leagues to the westward of the latter. There are several small islands off the north-west part of Catanduanes, and a reef lining its western side; but the channel is safe betwixt it and the islands that border the coast of Luzon, and this is the passage frequented by Spanish ships, when proceeding from Manila through Embocadero towards Port Seeseeran.

WEST COAST OF BORNEO.*

Caution for ships touching on the N.W. coast of Borneo.

THE predatory and treacherous disposition of the inhabitants of Borneo has discouraged almost every European from venturing to trade there. On the north-west coast in the river of Borneo Proper, there are about forty or fifty large proas† belonging to the town, which are instantly armed and filled with men, when a ship is to be assaulted. Therefore, except in a large ship well fitted for defence, it is not safe to remain in the road; and it is *certain destruction* to go up the river to the town. If a boat is sent on shore, the Rajah will offer to trade when the ship is brought into the river, and when the commander comes to visit him: beware of complying with either of these conditions, for, by doing so, Captain Dixon, of the May, a stout ship, well armed, was massacred with his four officers and part of the crew, and the ship and cargo seized. About three months after this catastrophe, the Warren Hastings, mounting about 16 guns, anchored in the road of Borneo Proper, and after remaining a few days, and communicating in her boat with the town, 23 large proas came out of the river to attack her, which obliged her to leave the place without trading. It may, therefore, be only necessary to notice briefly the principal places on this coast, which are sometimes visited by European navigators.

Abai Harbour and adjacent coast.

ABAI HARBOUR, in about lat. 6° 21′ N., distant 15 or 16 leagues S.W. by S. nearly from Tanjong Sampanmangio, the north point of Borneo, is formed by the peaked island of Oosookan, which lies about a league to the westward of Tampassook Point. The entrance is on the east side of the island, but there is not depth in the harbour at high water for a vessel drawing above 12 feet, nor is the depth much greater in the river. About $1\frac{1}{2}$ miles North from Oosookan, there is a reef of rocks partly visible at half-ebb, and several coral banks, with from 4 to 6 fathoms on them, lie in the offing betwixt this place and the north point of Borneo; the Mantannane Isles in lat. 6° 39′ N., and a rock or reef which is said to lie 4 or 5 leagues northward of them. Soundings extend a great way out from the coast, and are pretty regular in sailing along; there are several bays without shelter, and Batomande Point, about 5 leagues southward of the North Point of Borneo, has a reef of rocks, partly above water, projecting from it, which ought to have a berth of half a mile, or more. A chain of mountains stretches along the coast, which, at Tampassook and some other parts, is low near the sea.

* By the natives pronounced *Brunai*.

† Or Prahus.

AMBOON HARBOUR, separated by a bay from Oosookan Island, has a small isle in the entrance, and *is said* to be pretty safe, with sufficient depth of water. Tanjong Kaetan, about 7 leagues farther S.W., is the north point of a great bay, in which Pulo Gaya and other islands stretch along the coast to Pulo Teega, in lat. 5° 38′ N., and 14 leagues S.W. of Tanjong Kaetan. Mangallom Island, and some coral shoals to the westward of it, lie in the offing near the edge of the bank of soundings. Keemanees Point, about 5 miles S.W. by S. from Pulo Teega, or Three Islands, has a reef projecting 1½ miles; and W. N.W., 5 or 6 miles from it, there is a dry sand-bank, and a shoal, with 2 fathoms water, about 2½ leagues to the south-westward of the latter. To the eastward of the point there is good shelter in 7 fathoms, mud, from S.W. and West winds. Amboon Harbour and neighbouring coast.

LABOOAN ISLAND, about 7 or 8 leagues S.W. from Keemanees Point, is of moderate height: several isles off its S. E. part stretch towards the Borneo shore, leaving a passage for small vessels. From its S.W. point, four isles, connected by rocks, project S. S.W. about 5 miles, with an islet and a reef stretching from their extremities: the two next to Labooan are called Corooman, and the others Roosoocan. The channel into Borneo Road is between these and Tree Island, or Two Mast Island, which is small, and distant about 2½ leagues S. S. Westward of them. The depths in the channel are from 30 to 20 fathoms, and although the bottom is hard, with irregular soundings in some parts near the islands, they may be approached within 2 miles, or less. Labooan, and other islands.

PULO MOOARRO, distant 4 or 5 miles southward from Tree Island, forms the west side the entrance of Borneo River, and is separated by a narrow channel from the main land. A sand or reef stretches from its point to N. E. 3 or 4 miles, then round to N.W. towards Tree Island, and the latter is also fronted by a reef: the change from soft to hard ground denotes the approach to the reef off Pulo Mooarro. The channel into the river is close to the S. E. point, and along the south side Pulo Mooarro, being bounded on the other side by an extensive mud-bank. The town of Borneo, or Borneo Proper, is 4½ leagues up the river, which is navigable by vessels of considerable burthen; junks, of 500 tons measurement, are built here, for the China trade, and are navigated by Chinese. River and town.

The anchorage in the road is about 5 or 6 miles N. E. of Pulo Mooarro, in 9 or 10 fathoms, mud; but the whole space between the entrance of the river and the islands fronting Labooan may be considered as the road. The Warren Hastings, at anchor in 21 fathoms, mud, had the east point of Pulo Mooarro bearing S. by E., about 6 or 7 miles distant, Tree Island W. S.W., islands to the northward from N. ½ E. to N. E. by E., distant from the South Roosoocan 5 or 6 miles, and made the lat. 5° 0′ N. by observation. Some accounts place Borneo Road several miles more northerly; Captain Kirton's plan of the river makes Pulo Mooarro in lat. 5° 4′ N. There are only two tides in 24 hours, the flood in the road setting in the South-west Monsoon 8 hours S. Easterly, and the ebb 14 hours to N.W., but not strong. Anchorage. Tides.

TANJONG BARRAM, or LOW CAPE, has a reef of rocks or breakers projecting a great way to the S. Westward and westward; it is distant about 27 leagues W.S.W. of Borneo Road, the coast between them forming a bay, with irregular soundings of 15 to 30 fathoms about 4 or 6 leagues off shore. In the offing are some small isles and shoals, but their true positions are uncertain; about 7 leagues nearly W. N.W. from Tanjong Barram.

Tree Islands, off the entrance of Borneo Road, there is a coral bank, having on it 5 or 6 fathoms.

Tanjong Dattoo.

TANJONG DATTOO, in about lat. 3° N., forming the west point of Sedang Bay, in which are a number of small isles, has a reef projecting from it, and an islet on the extremity. The coast between it and Tanjong Barram, distant about 60 leagues, forms two large bays, separated by Tanjong Sisor, a point about 26 leagues from the latter. There are some dangers abreast this point in the offing, not well known: in sailing along, they are best avoided by keeping within 4 or 5 leagues of the coast.

Tanjong Apee.

TANJONG APEE, in about lat. 2° 0′ or 1° 55′ N., lon. 109° 14′ E., distant about 30 leagues S. Westward from Tanjong Dattoo, is fronted by a reef, projecting to a considerable distance, and the hills over it being connected by low land, have the appearance of islands when seen from northward. The coast in this space forms a concavity, which requires much caution in approaching, or in passing between it and the South Natuna Islands in the offing, to the northward of Tanjong Apee; this channel has the Larkin Shoal and others in it, probably not yet known, as the following information seems to evince.

Larkin Shoal.

Mac Koy Rock.

MAC KOY ROCK is another danger, discovered May 2nd, 1835, at 8 A.M., by Captain Mac Koy, in the ship Atwick.* When aground on the rock, where the ship lay 8 hours, observed lat. 2° 16′ N., the Haycock bearing W. 2½° N., distant about 10 miles, and apparently the nearest land; Sapata group from N. 2½° W. to N. 49° W.; a *gap*, being the centre of an island, S. 15° W; northernmost high land of Borneo S. 68° E. The rock is of small extent, formed of coral, with from 3 fathoms to 8 feet the least water over it; and it appears to be about 6 or 7 miles westward of the Larkin Shoal, proving the necessity of great caution in ships passing between the South Natunas and the coast of Borneo.

Tides.

The tides run along the N.W. coast of Borneo from 1 to 2 miles an hour; the stream or current to N. Eastward runs strongest in the South-west Monsoon; and in the northerly monsoon the current or tide to the S.W. prevails. Land and sea breezes are common, particularly in the South-west Monsoon. The South Natunas, Larkin Shoal, and other dangers in that locality, have been described in the section which treats of the "Islands in the south-western part of the China Sea."

Sambas River and coast adjacent.

SAMBAS RIVER (the entrance), in lat. 1° 13½′ N., lon. 109° 3′ E., by lunar observations, distant about 16 leagues southward of Tanjong Apee, has a wide entrance, with some small islets touching the north point, and two hills on the other. The town is about 10 leagues up the river on the south branch, which has many windings near the town. The principal branch is wide, running directly eastward, having many lateral branches, one of which leads to Borneo; and the sea flowing into the river a great way makes the water brackish 4 or 5 leagues up, so that ships in want of water are obliged to get it from a great distance. The anchorage in the road is off the mouth of the river, bearing East or E. ½ N., in any convenient depth, from 15 to 5 fathoms, the decrease being regular over a soft bottom to 4 fathoms about 1½ or 2 miles off shore. The soundings are regular along this part of the coast, and extend across the sea to Pulo Lingin, and to the entrance of the strait of Singapore. Sambas is one of the places on

* On his previous voyage he discovered a dangerous rock, bearing this ship's name, situated to the northward of Clement Strait, upon which she received great injury.

the Borneo coast sometimes visited by ships employed in the eastern trade from Bengal; it was fortified by a piratical rajah, who was driven to the interior by a British force sent from Batavia in 1812, but he is said to have returned to it again. Since the late treaty with the Netherlands government, the Dutch have claimed as their right most of the trading ports along this coast, where they have placed commercial residents and some troops. In lat. 1° 4′ N. is Slackoo Road, where vessels sometimes stop to trade. Slackoo Road.

MAMPAVA POINT, in lat. 0° 17½′ N., lon. 109° 0′ E., distant about 19 leagues South a little westerly from Sambas River, is 4 miles to the westward of the mouth of Mampava River, only navigable by proas, and has a fort at the entrance of the town of Mampava a few miles inside. The anchorage in the road is in 5 to 8 fathoms, about 3 or 4 miles off shore, with the mouth of the river N. by E. ½ E.; or to the westward of the point at discretion, for the soundings are regular all round, decreasing gradually to 4 fathoms: there is a landing place at the point. Pulo Dattoo is a high island, bearing W. by S. ½ S., about 9 leagues from Mampava Road, and several islands front the coast to Battooblat Hill and Point; the Point is nearly mid-way betwixt Mampava Point and Sambas River. These islands are safe to approach, with a channel of 6 to 8 fathoms inside of them; but the Boorong group, contiguous to Battooblat Point and Tanjong Moora, being formed of isles near to each other, large ships usually pass outside the outermost one, called Lamookatan, or Great Boorong; although there is a safe passage inside this island between it and those contiguous to the coast, where a ship may save time by working through it with a contrary wind, when the current is running strong against her outside the islands. Mampava.

In Mampava Road the tides run about 2 miles per hour, nearly E. S. E. and opposite.

PONTIANA, or LEWA RIVER (the entrance), in lat. 0° 2′ N., lon. 109° 12′ E., is about 7 leagues S. S. E. of Mampava Point, the coast between them forming a bay. The anchorage in the road is in from 3½ to 5½ fathoms, with the river's mouth bearing E. by S. ½ S. or E. S. E., Pulo Datto W. ¼ N. or W. ½ N., and the extremes of Borneo from S. ¼ E. to N. N.W. ½ W., off shore about 4 or 5 miles. The Princess Charlotte of Wales, June 1st, 1813, anchored in 5½ fathoms, with the extremes of the land bearing from N. N. E. to S. by W., the entrance of the river E. N. E., off shore 5 or 6 miles, observed lat. 0° 1′ N. A shoal mud-bank projects out a great way from the mouth of the river, and although the bar is nearly dry at low water, there are 8 or 10 feet on it at high spring tides. The town is about 12 miles from the entrance, and has a fort, and at Balu Lagong, about 7 miles up, there is a fort on each side with 14 or 15 heavy guns mounted. These two places are sometimes visited by the Bengal traders: some bullocks and hogs may be procured here, and also at Mampava; but boats must go far up the river to procure fresh water during the dry season, which makes watering at Pontiana River very inconvenient. Pontiana River. Water and supplies.

A remarkable phenomenon was experienced by Captain Pearson, of the brig Lady of the Lake, in the months of May and June, while sailing along the coast on two different voyages; the following is an extract from his journal. "June 2nd, 1833, at daylight, when sailing along the coast in 10 fathoms water, experienced a singular incident; fresh water on one side the vessel, and salt water on the other, which continued for an hour whilst sailing about 2 miles on the boundary line of salt and fresh water. We filled all our empty casks with good drinkable water on one side of the

vessel, when it was quite salt on the opposite side; our then distance $2\frac{1}{2}$ or 3 miles off shore, lat. 0° 8′ S., with the appearance of the mouth of a great river abreast, which must be navigable for large vessels, as the water deepened in crossing its direction." This was probably Sanjavay River, one of the branches of Pontiana River, several of which reach the sea between the equator and latitude 0° 20′ S.

Coast from Pontiana River to the southward.

From Pontiana River the coast stretches South and S. by E. about 20 leagues to Tanjong Factie or Fatteye, in about lat. 1° 15′ S., and from hence it takes an easterly direction 8 or 9 leagues, having a channel of from 3 to 4 fathoms between Tanjong Fatteye and the large group of islets that front it. From this point numerous small islands extend southward and S. Westward to Carimata, which is distant from the former 15 or 16 leagues. Between the group of islets nearest Tanjong Fatteye and others to the southward there is a good channel, with 5, 6, and 7 fathoms water, through which the fleet passed in 1811, when bound to the conquest of Java; and nearer to Carimata there is another channel betwixt the small isles to the S. Eastward of it, and betwixt other isles and Carimata. The Osterly went through this passage, which was found very intricate, and in one part she had only 5 fathoms, rocky bottom, betwixt the islands that lie directly East from Carimata. It is not advisable to pass through the latter in a large ship. Captain Kempthorne, in H. M. brig Diana, carried soundings mostly of 3 to $3\frac{3}{4}$ fathoms when rounding Tanjong Fatteye, in proceeding along the coast by the *inner passage*. She had mostly light winds and southerly currents, and was from the 4th to the 23rd November, 1808, getting from lat. 4° S. to Pontiana Road.

Succadana.

SUCCADANA, in about lat. 1° 16′ S., distant 7 or 8 leagues eastward of Tanjong Fatteye, and situated on the east side the deep bay, inside that point, has good anchorage in 5 or 6 fathoms in the road, with a group of isles to the southward. This place is also visited at times by the eastern traders from Bengal. Although at the foregoing places it is not so dangerous to stop as at Borneo River, ships ought, nevertheless, to be well prepared for defence, and the officers continually on the watch, for they are liable to an attack.*

A caution.

Tanjong Sambar.

From Succadana, the coast extends South and S. by E. about 34 leagues to Tanjong Sambar, in about lat. 2° 53′ South; this is the S.W. point of Borneo, and with part of the circumjacent coast is low land. The coast between these places has seldom been approached under 10 or 12 fathoms, being fronted by islets or rocky ground in some parts; but the expedition against Java having proceeded along this part of the coast, by a route previously little known, renders a description of it indispensable.

Inner Channel.

THE INNER CHANNEL, among the islands which lie between the coast of Borneo and Carimata, although narrow in some parts, has moderate depths, with generally good anchorage, and seems preferable to the route West of Carimata and Souroutou, for ships which have to work along the coast against the monsoon, whether bound to the northward or southward.

Panumbangan Islands.

Pulo Panumbangan, in lat. 1° 12′ S., lon. 109° 14′ E., by chronometers, extending

* Captain Sadler, of the ship Transfer, of Calcutta, was attacked in his boat and killed in Mampava River, in consequence of the deceitful conduct of the Rajah of that place, who was indebted to that commander about 30,000 dollars for opium and piece-goods; this Rajah also poisoned the master of a Chinese junk, to whom he was indebted about 8,000 dollars. There are many Chinese settled at these places on the west coast of Borneo, who, together with the Bugges, many of whom also reside here, are the only industrious inhabitants, the Malays being very indolent and treacherous.

about 2 leagues E. N. E. and W. S.W., is high, and forms the north entrance of the Inner Channel, and off its N.W. side, affords good anchorage from southerly winds in $5\frac{1}{2}$ or 6 fathoms. Fresh Water Bay, at this part of the island, has two runs of good water, the westernmost of which is the largest, where you fill the water behind a large black rock on the beach; the boats may approach close, or the casks can be landed on the beach, which consists of fine sand. Here, the fleet watered in July, 1811, when bound to attack Java; the William Pitt anchored in $5\frac{3}{4}$ fathoms, soft mud, June 30th, with the Island Panumbangan bearing S. $\frac{1}{2}$ E. to N. E., off shore $1\frac{1}{4}$ miles, and off the watering place 2 miles; the first and best watering place E. by S. $\frac{1}{4}$ S., second watering place S. E. by E., third watering place S. E., and Massa Teega Islands N. $\frac{1}{2}$ E. All these watering places are fronted by fine sandy beaches, and easily discerned: there are spars fit for topmasts on the island, but the trees seem to be too heavy. Watering Places.

If bound to the southward through the Inner Channel, the Borneo coast may be approached to 8 or 9 fathoms at discretion till near the three small isles Massa Teega, in lat. 0° 55′ S., distant about 2 leagues from the coast, and bearing North from Panumbangan. In working, do not stand too far to the westward, on account of Greig Shoal, but you may borrow towards the west part of Massa Teega to $8\frac{1}{2}$ or 9 fathoms, and off to 14 or 15 fathoms near the Lima Islands, which are a close group of small isles, united by reefs, distant 7 or 8 leagues to the westward of Panumbangan. Pulo Malapis, forming a group of three high islands, with some contiguous islets much farther to the eastward, one of which is called Double Island, lies to the S.W. of Panumbangan; Greig Channel, or the entrance of the Inner Channel, is formed between these, by leaving to the northward Pulo Seery, a small isle off the west end of Panumbangan, and all the islets of the Malapis group must be left to the southward; the course in steering through is S. Easterly, and the depths from 12 to 18 fathoms, mostly hard ground, which again becomes soft when through the channel. To the eastward of Panumbangan there are 4 and $3\frac{1}{2}$ fathoms, where small vessels may pass between it and the coast of Borneo, in soft bottom and regular soundings; here, in about lat. 1° 11′ S., is Goonong Myang, a mountain at a small distance inland, with low land fronting the sea, the south extreme of which, in about lat. 1° 16′ S., forms Tanjong Factie. Directions.

Having passed through the channel to the West of Panumbangan, the course is south-easterly 5 or 6 leagues to Pulo Papan, leaving to the westward the two Passage Islands, the soundings in this track being from 7 to 11 fathoms near the latter, shoaling to 5 fathoms towards the Button, a small isle to the S. Eastward of Panumbangan, inside of which are 4 and $3\frac{1}{2}$ fathoms. Pulo Papan.

Pulo Papan, in lat. 1° 28′ S., forms two small groups, betwixt which is the Papan Channel, about a mile wide, with from 9 to 15 fathoms water; it is formed between the west group and East Island, which is the largest island of the group, and has two islets near its north side. The passage to the eastward of Pulo Papan is also safe, with 12 fathoms near the island, decreasing fast towards the coast.

After passing through the Papan Channel the course is S. S. Eastward, leaving to the west Birdnest Islands,* and all others which lie to the East and S. E. of Carimata; the fair track is between these and the coast of Borneo, and the depth 9 to 12 fathoms near the islands, decreasing, but not always regularly, towards the coast.

In proceeding along the coast, care must be taken not to approach it too close in the night, for in lat. 2° 13′ S. to 2° 16′ S. lie the Minto Rocks, 4 or 5 miles off shore, some Minto Rocks.

* The Osterly passed through among these, and afterwards near the east side of Carimata; but she found that route very intricate, and had several times rocky bottom and very shoal water.

of which are near the water's edge, with a sand to the S. Eastward. A hill on the main, bearing E. 9° N. from them, in lat. 2° 14′ S., will be a guide in the day; and farther to the E. S. Eastward, in lat. 2° 22′ S., is a high peak. About 5 or 6 leagues off this part of the coast the depths are mostly from 14 to 17 fathoms, and from 9 to 11 fathoms about 4 miles outside Minto Rocks; but if you haul in for Rendezvous Island, they will decrease to 7, 6, or 5 fathoms near the reef that lines its western point, and projects around it to the southward and eastward.

Rendezvous Island.

RENDEZVOUS ISLAND, in lat. 2° 44′ S., lon. 110° 3′ E., its west point, or 1° 4′ E. of Cirencester Sand Bank by chronometers,* extends about 5 leagues to the north-eastward, and a chain of small islands and reefs nearly joins it to the main; this chain stretches also southward along the coast to Pulo Mancap, and is fronted with shoal water. Captain Graham, of the William Pitt, could scarcely find a passage in his cutter between Rendezvous Island and the main. About 4 leagues S. by W. from the west point of the island lies a bank with 3 or 3½ fathoms, which makes it proper, in leaving the anchorage at the N.W. part of the island, to haul off to the south-westward, to give a berth to this bank. When the fleet lay at Rendezvous Island in July, land and sea breezes prevailed, the former at East and E. S. E., veering to S. S. E. in a breeze; the island shews in hummocks, but cannot be seen above 5 or 6 leagues, and the west point forms in a bluff, when viewed from S.W. or southward.

Anchorage.

The fleet, of about 40 sail, under Commodore Broughton, assembled at this island, after having worked through the Inner Channel. The William Pitt anchored in 4¾ fathoms, July 11th, 1811, off shore about 4 miles, west point of Rendezvous Island bearing S. ½ W., its north point E. by N. ½ N., a small isle off this point E. by N. ¾ N., another isle E. N. E., a third small isle, with trees on it, North, just visible from the poop; north extreme of the land of Borneo N. N. E. The first two isles are united by a coral reef, which extends 2 miles N. N.W. from the second island, having near its extremity a large rock 20 feet above water; from this rock, in a N. E. direction, there is another island, about 4 miles long, surrounded by coral reefs.

Tides.

Although coral reefs, with sharp-pointed rocks visible at low water, project from 1 to 3 miles from most parts of Rendezvous Island, yet the western side, where the fleet lay, appeared tolerably clear, with a sandy beach, where wells were dug above high water mark, and afforded very good water. From the west point of the island, the land forms an elbow, by which there is shelter from all winds, from the eastward, with smooth water; and the tides were found here to be more regular than at any other part of the west coast of Borneo, the rise 8 or 9 feet. About 4 or 5 miles South of the west point of the island lie three small isles, with coral reefs projecting to them; other isles bear South from the point about 4 or 5 leagues, and they are all fronted by shoal water, the depth being only 5 fathoms about 3½ miles to the westward of the west point of Rendezvous Island.

Pulo Mancap.

PULO MANCAP, MUNCOO,† or MANKOKH, in lat. 3° 5′ S., lon. 110° 11′ E., or 3° 18′ E. of Edam Island, by the observations of Captain Ross, of the Discovery, with good chronometers, is a small low island, which may be seen about 5 leagues from the deck of a large ship, and is distant about 2½ leagues to the southward of Tanjong Sambar: near it to the N. N. Eastward there is said to lie another small isle, which

* This longitude was settled by Captain Ross, in the Discovery, by excellent chronometers, but the observations of the fleet made it several miles more to the westward.

† It is said to be named from Muncoo, a cup or bowl.

appeared to Captain Ross, when examining the surrounding shoal, as three bushy islets or rocks. Other islands front Tanjong Sambar to the westward, extending in a northerly direction towards Rendezvous Island.

To the westward and south-westward Pulo Mancap may be approached to 16 or 17 fathoms, at the distance of $4\frac{1}{2}$ or 4 leagues, but not nearer; for, with it bearing East, distant 10 miles, the Discovery got suddenly into 4 and $3\frac{3}{4}$ fathoms, hard sand, on the shoal bank that encircles the island; when it bore N. 44° E., distant about 7 miles, she had $3\frac{3}{4}$ fathoms, fine sand, and with it bearing N. N. E. $\frac{1}{4}$ E. about 10 or 12 miles, seen from the deck, she struck on the ground, though drawing little water, occasioned by the swell. The island ought not to be brought to the northward of N. E. by N. while in sight from the mast-head, for if it bear N. N. E. $\frac{1}{4}$ E. about 6 leagues distant, you will suddenly get into shoal water on some of the spits that stretch far to the southward, having from 10 to 17 fathoms, soft bottom, near them. Shoal Bank.

MANCAP SHOAL is to the southward of the island of this name, at the distance of $6\frac{1}{2}$ leagues; its southern extremity is in lat. 3° 22′ S., by the Walpole's account, which ship grounded on it. This, however, is only the southern limit of the *inner shoal*, from whence other shoal banks, detached from each other, stretch S. S.W. and S. by W. to lat. 3° 46′ or 3° 48′ S., having large swatches or channels betwixt some of them, through which several ships have passed. Mancap Shoal.

The Bombay Castle, January 12th, 1794, with Pulo Mancap in sight from the mizen shrouds bearing N. N. E. $\frac{1}{4}$ E., distant about 6 leagues, shoaled suddenly to 7 fathoms and anchored, a spit of shoal water bearing from S.W. to S. E. $\frac{1}{2}$ S., about a mile distant, on which the boats found $4\frac{3}{4}$ fathoms in some places, with overfalls and very irregular depths to the distance of 3 miles S. E. and S. Westward. After weighing, she steered between S. S.W. and S.W., crossed the spit in 5 fathoms, then deepened to 14 fathoms, and shoaled again to 7 fathoms; afterwards deepened gradually to 22 fathoms. Having run about 5 miles from the place where she was at anchor, the appearance of a shoal was seen about 2 miles off, very conspicuous, by broken water extending from E. N. E. to E. by S. This was found to be in lat. 3° 26′ S., by noon observation. Mancap and other shoals.

The Discovery, Captain Ross, May 26th, 1814, after striking on the *inner* shoal in $2\frac{3}{4}$ fathoms, with Pulo Mancap in sight from the deck bearing N. N. E. $\frac{1}{4}$ E., distant 10 or 12 miles, steered South, and soon deepened into 10, 11, and 13 fathoms, mud, and shoaled again to 6 fathoms, sand, which appeared to have less water on its western part, Pulo Mancap then visible from the deck, bearing N. N. E. $\frac{1}{4}$ E., distant about 12 miles. From hence, steering S. by W., soon deepened into a mud channel of 17 fathoms, shortly after shoaled suddenly to 5 fathoms, sand, on another long narrow spit, extending W. N.W. and E. S. E., Pulo Mancap not visible from the deck; when over it, deepened to 15 fathoms, mud, and shortly after shoaled to 7 fathoms, sand, and anchored, seeing breakers bearing S. 54° E., distant 2 miles. The boat passed over a spit of $2\frac{1}{4}$ fathoms, about half-way between the ship and the breakers, close to which there is $1\frac{1}{2}$ fathoms water; this danger is in lat. 3° 24′ S., and $3\frac{1}{2}$ miles West of the meridian of Pulo Mancap, and appears to be the danger mentioned above, seen by the Bombay Castle.

H. M. S. Fox, with a fleet in company, October 30th, 1797, had 11 fathoms, soft mud, at noon; shortly after, the water shoaled suddenly to 9 fathoms, and she immediately grounded, but with some exertion was got off shortly after. Captain Heywood, then a lieutenant in the Fox, sounded in the cutter to the N. Eastward and E. N. Eastward, and had continued overfalls from 7 to 2 fathoms, steering in those directions, to

the distance of $2\frac{1}{2}$ miles from the ship. That part of the shoal where the ship grounded, from noon observation, was found to be in lat. 3° 32′ S., lon. 110° 4′ E., by chronometer from Malacca; or S. 13° W., 11 or 12 miles distant from the *supposed* southern verge of Mancap Shoal. When in lat. 3° 36′ S., she steered E. S. Eastward, and had no less than 19 or 20 fathoms water.

The Princess Amelia, Walmer Castle, Hope, and Taunton Castle, in company, at $1\frac{1}{2}$ P.M. November 15th, 1811, were steering S. E. by E., with the wind at S.W., squally and rain, in 20 fathoms water, when breakers were seen to leeward; the Hope shoaled to 15 fathoms and tacked, but the Princess Amelia, missing stays, was obliged to anchor immediately in 19 fathoms, with the breakers to leeward, bearing from N.W., round by the eastward to S. S. $\frac{1}{2}$ E., distant about half a mile, and the Walmer Castle anchored near her. By mean of their noon observations and chronometers, this dangerous shoal is situated in lat. 3° $31\frac{1}{2}$′ S., lon. 110° 4′ E., and must be that on which the Fox grounded, although no breakers were then visible, probably occasioned by the tide being high at that time, with a smooth sea; whereas a heavy swell prevailed when the above-mentioned ships got embarrassed with the shoal.

These *outer* shoals off Pulo Mancap bound the southern part of the Carimata Passage to the eastward; betwixt which and the eastern Discovery bank, which seems to be the nearest danger on its western side, the channel is 17 or 18 leagues wide.

The True Briton, with other ships in company, December 31st, 1801, steering eastward to round Mancap Shoal, got suddenly into $6\frac{1}{4}$ fathoms, red clay and mud, in lat. 3° 30′ S., by double altitudes, lon. 110° 5′ E., or 1° 23′ E. from the west end of Souroutou by chronometer. The Asia found a channel through one of the swatches between the banks, but the True Briton steered to the southward on the west side of them; when abreast the knowl, in about lat. 3° 46′ S., which is the southernmost patch of Mancap Shoals, the depth decreased in 3 casts from 18 to 10 fathoms, in edging away S. E. towards its western edge.

Betwixt this southernmost patch and that on which the Fox grounded there is a good channel, by keeping in lat. 3° 36′ to 3° 42′ S.; but when the latitude is not correctly known by observation, it is advisable to pass round to the southward of them in about lat. 3° 49′ or 3° 50′ E. Although the bottom near and among these shoals is generally a mixture of red and green clay, with mud; yet the soundings are very irregular, with overfalls, making it prudent not to come under 15 or 16 fathoms towards them.

CARIMATA PASSAGE, AND SOUTH COAST OF BORNEO, WITH BRIEF DIRECTIONS FOR SAILING TOWARDS THE STRAITS EAST OF JAVA.

Carimata Passage.

THE CARIMATA PASSAGE, or OUTER CHANNEL, called also the STRAIT of BILLITON, is bounded on the east side by Carimata, Souroutou, and the other islands adjacent to the S.W. part of Borneo; and on the west side by the island Billiton, with its adjoining isles and dangers. Ships from Malacca Strait, when bound

by the eastern passage to China, or to the Molucca Islands, generally proceed through the Carimata Passage after October, when the North-west Monsoon prevails to the southward of the equator.

This passage has been also frequented at various times by ships bound from China to Europe during war: there appear notwithstanding to be several dangers nearly in the track followed by those ships, rendering great circumspection indispensable; but the dangers which bound this passage on each side having been correctly ascertained by Captains Ross and Maughan, of the Bombay marine, it may now be navigated with much greater safety than formerly.

Ships proceeding from China towards the Carimata Passage in the North-east Monsoon should endeavour to see the east side of the Grand Natuna, giving it a berth of 6, 7, or 8 leagues; having passed it, they should steer about S. by W. to clear the South Natunas, leaving them to the eastward; then a S. ½ W. course will carry them fair towards Direction Island. If they pass outside of it, after giving a berth to Welstead Rock, a S. ¼ E. course from thence will bring them in sight of Carimata, bearing about S. E.; but it is prudent to keep well out to the westward until Carimata bear E. by S. or East, to avoid the following danger.

GREIG SHOAL was discovered by Captain William Greig, of the ship Lord Minto, in 1809; he gives the following description of it. Greig Shoal.

"This dangerous shoal we got upon at noon, 9th June last, and found it to extend from lat. 0° 52′ S. to lat. 0° 58′ S.; although there is deep water within this extent, I think it ought to be considered as one shoal. On both extremes of it we were often in nearly the same depth of water as the vessel drew, which was 13 feet, and this was in steering through between much shoaler spots, with the body of Carimata then seen from the deck, bearing between S. S. E. ¾ E. and S. E. by S.; the shoal bears nearly N. ¼ W. from the west point of Souroutou."

This may probably be the shoal which the ship General Wellesley struck upon, as cloudy weather prevented her from determining its situation, but she places it in about lat. 1° 19′ S., to the northward of Souroutou. The journal states: "At 6 A.M. Carimata bore East 6 or 8 leagues; steering to the northward, struck on a reef at 10 A.M., and passed between the rocks, some of which are 4, 5, and 6 feet under water; hauled off N. N.W. and soon deepened to 12 and 13 fathoms. Near noon, passed over a bank of sand, with 6 fathoms water on it; but the weather being cloudy, got no observation, nor could any land be seen."

SHIPS coming from Singapore Strait should steer from Pedra Branca E. by S. 9 or 10 leagues if the wind permit, and E. S. E. about 8 or 9 leagues more, to give a berth to the Dogger Banks: afterwards they should pass to the southward of the Island St. Barbe, and from thence steer for Souroutou; but with West or S.W. winds they may round the north part of Billiton at a moderate distance, then pass to the southward of the Ontario Shoal, giving a berth afterwards to the Montaran Islands. Directions.

CARIMATA, or KRAMATA, is a high island, about 3½ leagues in extent; the peak or most elevated hill, being about 2,000 feet high, may be seen at the distance of 15 or 16 leagues, and is in lat. 1° 36½′ S., lon. 108° 54½′ E.; the N.W. end of the island is in lat. 1° 33′ S., lon. 108° 49′ E. by chronometers. About 4½ or 5 leagues distant, bearing North from the northern side of this island, there is a group of islets, Carimata

called Lima Isles, with soundings of 12 to 14 fathoms near them, which are the outermost of those small islands that stretch from Carimata towards the Borneo Shore.

Souroutou. SOUROUTOU ISLAND, lying off the S.W. part of Carimata, and separated from it by a narrow channel, is little more than half the height, and much smaller than Carimata, but may be seen 9 or 10 leagues. The west end is in lat. 1° 42′ S., lon. 108° 41½′ E.,* by mean of chronometers from Malacca and from the Grand Ladrone; at a sandy beach on the south side the island, and near the east point, there is a good watering place, but high water is required for a large boat to get over a reef, near to which you may anchor in 7 fathoms, mud. Fresh water, it is *said*, can only be got at the west end of the island, at the foot of a hill of moderate height, where a ship may anchor in 10 fathoms. At the west point of Souroutou there is a hummock, which has been mistaken for a small island, and called the Quoin from its appearance, but no isle exists here. About 2 or 3 miles off the west end of Souroutou the depths are 16 and 17 fathoms. The ship Aurora, November 11th, 1816, is said to have seen breakers from the mast-head, bearing S. by W. ½ W., distant about 3 miles, when the eastern extremity of Souroutou bore E. by N. ¼ N., the other extreme being obscured by clouds, as the weather was then squally.

Fresh water.

Ontario Shoal. ONTARIO SHOAL, on which the American ship of that name, Captain J. Whetton, was wrecked, January 4th, 1797, is very dangerous, lying in the direct track *formerly* recommended to ships when passing between Souroutou and Billiton. It extends W. N.W. and E. S. E. about half a mile, and is composed of sharp spiral rocks, with the tops of some of them dry at low water spring tides; but the small break against their sharp points cannot be distinguished from the topping of a common sea; and the shoal is steep to, having 18 and 19 fathoms at a ship's length from the rocks. From the Ontario's wreck, the N.E. end of the Quoin was just shut in with the west end of Souroutou; the east end of Souroutou N. N. E. open about a quarter of a point from the west end of Carimata, and distant about 6½ leagues. Since the Ontario was wrecked on this shoal, the Duke of Clarence and Cirencester have struck on it, and the Coromandel has been wrecked on the same shoal.

The Cirencester grounded on this shoal near midnight, November 9th, 1810, and by carrying out the stream anchor she hove off it at 6 A.M.; that part where the ship grounded was found to stretch W. N.W., and E. S. E. about 3 cables' lengths, its eastern side taking a sharp bend round to the southward and S.Westward; and no part of the shoal was visible until close to it, except on a patch at the southern extremity, the sea was a little discoloured by the rocks being near the surface. The soundings are no guide in the approach to this dangerous shoal, there being 23 and 24 fathoms close to it on the north and east sides, from 18 to 25 fathoms nearly close to the rocks on the west side, and 25 fathoms, clay, at the distance of a cable's length.

The boats found irregular depths on the reefs of 5 and 6 fathoms to 12 feet. When the ship was upon it, the west end of Souroutou, or outer extreme of the land, bore N. ¼ E., a small island in the middle of the opening between Carimata and Souroutou N. N. E. ½ E., the peak or highest part of Carimata N. E. ¾ E., observed lat. 2° 2′ S. This shoal was examined by Captain Ross, in the Company's surveying ship Dis-

* Captain Ross made it in lon. 108° 40½′ E. by mean of chronometers from Batavia, and from the North Natuna, corresponding with each other within half a mile, which is probably nearest the truth.

covery, who found it half a mile in extent W. N.W. and E. S. E.; the boat had 1½ fathoms in sounding on it about high water, and in many places the depth appeared to be less. He made the shoal in lat. 2° 1′ 15″ S., lon. 108° 39¼′ E.; when at anchor in 21 fathoms, on a mud bottom, with the shoal bearing W. by S., distant one mile, the west point of Souroutou bore N. 4° 45′ E., altitude of the highest part of the island 39′ 30″, east end of Souroutou N. 24° 3′ E., the highest land of Carimata N. 32° 15′ E.; one of the Montaran Islands, visible from the main-top, bore S. 6¼° W., and the shoal is 19¼ miles distant from Souroutou Island.

There may probably be another danger, detached a little way from the Ontario Shoal; for Lieutenant Davidson, of the brig Waller, on his passage from Malacca to Amboina in April, 1803, saw *two* shoals. The first was probably the Ontario, which appeared about half a cable's length each way, nearly even with the water's edge, steep to, with a small breaker on its centre. The Waller had 24 fathoms, soft ground, when passing abreast the shoal within a quarter of a mile distance, at 1 P.M., April 18th; when in one with the south point of Carimata it bore N. E. ¾ N., the N. Westernmost part of Souroutou, then in sight, bearing N. ½ E., distant about 5 leagues. About a mile to the S. Eastward of this shoal a small breaker was perceived on another shoal, which must either be the southern extremity of the Ontario Reef, or a rocky patch separated a little way from it: but circumstances prevented Lieutenant Davidson from sending a boat to examine them.

THE CIRENCESTER SHOAL is in lat. 2° 54½′ S., lon. 108° 58½ E., or 2¾ miles West of the Cirencester Sand Bank, by the chronometers and observations of Captains Ross and Maughan, who examined it May 14th, 1814, with the surveying ships Discovery and Investigator; they found it to bear from the easternmost Montaran Island S. 15° E., distant 25 miles: the least depth found on it was 2 fathoms at low water, and there is probably 3½ fathoms on it at high water; close around the soundings were 17, 16, and 15 fathoms. The shoal is narrow, and not more than 100 yards in length North and South; it was not discovered by the boats sounding for it, until the rocks were seen under the bottom. Cirencester Shoal.

This shoal was first seen by Captain Halkett, in the Cirencester, November 13th, 1810, when working to the southward with light S. E. winds, and it was perceived by a strong rippling; the boat was sent to sound the place, and found only 2 fathoms water, part of Billiton, or else one of the Montaran Islands, being then in sight from the mast-head, bearing about N.W. by W.

CIRENCESTER SAND-BANK, in lat. 3° 17′ S., lon. 109° 4′ 54″ E., by an observation of Jupiter's first satellite, taken by Captain Ross on the bank, and in lon. 109° 1½ E. by chronometers, bears from the easternmost Montaran Island S. 11½° E., distant 46¾ miles. It is about a third of a mile in extent N. N.W. and S. S. E., and not above 100 yards in breadth, part of it being a bank of white coral, overflowed in the middle at high tide, which then gives it the appearance of two small sandy patches, the larger being to the southward. The depth of water increases towards this bank, there being 25 fathoms close off the north end, 32 fathoms off the south point, and 35 fathoms about three-quarters of a mile to the westward: with a good look-out it may be seen from the mast-head about 8 miles at low water, but probably not above 3 or 4 miles at high tide. Cirencester Sand-bank.

The Cirencester saw this sand-bank on the same day that she discovered the shoal described above, and about 2 miles to the eastward of it had very irregular soundings,

from 16 to 20 fathoms, changing almost at every cast of the lead. When Captain Ross examined this bank, May 11th, 1814, he found two spars erected on it, probably placed there by some persons who had been shipwrecked. The ship Samdany, June 16th, 1812, passed within a mile of the west side of this sand-bank, and deepened from 14 to 17 fathoms as it was approached, steering S.W.; this ship made it in lon. 109° 10′ E., and agrees with the Cirencester and Captain Ross in making its lat. 3° 17′ S.

Lavender Shoal.

LAVENDER SHOAL, discovered May 17th, 1830, by Captain T. Lavender, of the ship Roman, bound from Canton to New York, who passed it at 2 P.M., bearing East about a quarter of a mile distant, in soundings from 20 to 26 fathoms. It extends North and South about three-quarters of a mile, but is not more than 200 yards in breadth, having breakers along the eastern side, where the depth did not appear to exceed 2 feet. When the Cirencester Sand Bank was seen from the fore-yard bearing about N. by W. to N. by W. ½ W., the shoal bore S. by W. 2 or 3 miles; it is in lat. 3° 25½′ S., lon. 109° 2′ E.

Discovery Sand-bank.

DISCOVERY EASTERN BANK, in lat. 3° 32′ 40″ S., lon. 109° 9′ 43″ E., or 2° 26′ ½ E. from the South Watcher by chronometers, measured by Captain Ross, in the Company's surveying ship Discovery, February 14th, 1813, is probably the sand called ENK-HUYZER, in Van Keulen's chart; and it was, perhaps, here that the Forbes privateer and her Dutch prize was wrecked, on the night of the 11th of September, 1806. This bank extends about half a mile North and South, elevated in the centre about 15 or 20 feet above low water mark; it has some coarse grass growing on it, and two small trees, destitute of leaves, appeared at a distance like two black rocks on a white sand. The whole of the bank consists of small white coral, which may easily be mistaken for sand; the Discovery, at anchor about half a mile to the eastward of it, had 20 fathoms water, and about 5 miles East of it, 25 to 29 fathoms. This danger is no doubt that formerly called St. Clement Shoal, but its situation was not known within 30 miles of latitude.

Discovery Western Bank.

DISCOVERY WESTERN BANK, in lat. 3° 39′ S., lon. 108° 43′ E., or 1° 59½′ East of the South Watcher, by chronometer, was found to be a coral bank, extending North and South about a mile, elevated about 15 feet in the centre at low water, but the boat could not land, it being surrounded by a coral reef, on which the surf broke high. About a mile to the eastward of this bank the Discovery anchored in 20 fathoms, soft mud, February 13th, 1813, and to the northward and westward of it the depths were 16 and 17 fathoms.

Discovery Reef.

DISCOVERY REEF, in lat. 3° 36½′ S., lon. 108° 48′ E., distant about 6 miles N. E. by E. from the last-mentioned bank, was found not to be a mile in extent, with a few rocks above water, and high breakers projecting around them. The Discovery passed about a mile to the southward of this reef in 19 fathoms water, and when it bore North at the distance of a mile, the Western Bank was just in sight from the main-top-gallant-yard, bearing W. S.W.

Shoe Island.

SHOE ISLAND, or PYRAMID, in lat. 3° 47½′ S., lon. 108° 2′ E., or 1° 26½′ East of the South Watcher by the Discovery's chronometers, lies to the southward of Billiton, and 14 leagues to the westward of the last-mentioned shoals; and the soundings

between them are generally from 13 to 17 fathoms. It may be seen 6 or 7 leagues from a ship's deck in clear weather; about a mile to the southward of it lies a large white rock,* with soundings of 16 fathoms at a small distance to the S. S. Westward; and the soundings from hence to the North Watcher are generally from 12 to 16 fathoms. White Rock.

GRACE SHOALS, discovered by the Dutch ship Grace, D. Allen commander, July 22nd, 1829, proceeding from Benjar Masseen River towards Gaspar Strait, Manila, and China, are situated near the south coast of Billiton, and appeared to be very dangerous, more particularly as they were not previously known. At daylight Shoe Island bore W.S.W. about 4 leagues, steered West, and at 8 A.M., when Shoe Island bore S.S.W., distant about $3\frac{1}{2}$ miles, breakers were seen bearing N. E. by N., distant one mile, with some black rocks a little above water; at the same time other breakers bore S.S.W. about three-quarters of a mile, and the soundings were 11 and $11\frac{1}{2}$ fathoms, sand and mud, in passing between these dangers, which probably extend in patches all the way out from the coast of Billiton. A ship ought, therefore, never to attempt this passage inside Shoe Island, except in very clear and favourable weather. Grace Shoals.

HEROINE SHOAL, near the south coast of Billiton, discovered by the ship of this name, June 14th, 1829, appeared extensive, with breakers on it, which were passed about $1\frac{1}{2}$ miles. At 6 A.M., Two-Peaked Mountain, on Billiton, bore N. N.W., a small island N.E. by E. $\frac{1}{2}$ E., Shoe Island seen from the mizen shrouds S. E.; from this station steered S.W. 4 miles, and S. S.W. 6 miles, when breakers were seen bearing S. E., distant $1\frac{1}{2}$ miles, and stretching about N. E. and S.W. At noon the observed lat. 3° $31\frac{1}{2}'$ S., lon. 107° 53′ E., the shoal in sight from the mast-head bearing about East. June 15th, at noon, observed lat. 3° 32′ S. when passing the southernmost patch of sand to the S.W. of Shoalwater Island at half a mile distance. Heroine Shoal.

The shoals which lie on the west side the Carimata Passage, having hitherto been little known, have occasioned the loss of five or six ships since the Ontario was wrecked, but their positions being now well ascertained, they may be easily avoided; indeed, all ships should give them a wide berth in the night particularly, by borrowing over towards the coast of Borneo, on the east side of the channel. A caution.

BILLITON ISLAND is fronted on the east side by several groups of small islands, exclusive of those before mentioned. They extend nearly N. N. W. and S. S. E. about 10 or 11 leagues, and most of them are surrounded with or connected by rocks, sands, and shoals. There is a large range of these islands, in about lat. 3° 8′ S., through which the Warren Hastings passed, betwixt a long island to the East and a small round one to the West, having extensive reefs projecting from them. The soundings were pretty regular in the channel betwixt the reefs, decreasing to 6 and $5\frac{1}{2}$ fathoms on the west side, and increasing to 13 fathoms abreast the reef that projects from the easternmost island. There are nine islands to the eastward of this passage, and a greater number on the west side, towards Billiton. Billiton Island, and the isles and dangers to the Eastward.

The south end of the Island Billiton is in about lat. 3° 22′ S., to the S. Eastward of which the southern extremity of the chain of isles and reefs terminates at the distance

* Shoe Island and its adjoining white rocks are the Bird Island and White Rock, which were formerly thought to lie much farther to the eastward.

of about 9 or 10 leagues from Billiton; consisting mostly of dangerous reefs, with irregular soundings of 10 to 20 fathoms near them. In May the Warren Hastings found regular tides off the south part of Billiton, setting nearly East and West from $1\frac{1}{2}$ to 2 miles per hour; she passed between the S. E. end of that island and the reefs in the offing, saw breakers on one of them bearing East, $1\frac{1}{2}$ miles distant, then in lat. 3° 36′ S. by observation, with Billiton bearing from N. by E. $\frac{1}{2}$ E. to N. by W., distant 5 or 6 leagues, and a small isle in sight from the mast-head E. S. Eastward.

Tides.

Besides the shoals in the offing, examined by Captain Ross, there are other shoals nearer to the east coast of Billiton, and in the vicinity of the Montaran Islands, seen both by him and other navigators.

Osterly North Shoals.

OSTERLY NORTH SHOALS. One of these in lat. 3° 19′ S., lon. 108° $40\frac{1}{2}$′ E., or 18 miles West of Cirencester Shoal by chronometers, was found to be a coral bank about $1\frac{1}{2}$ or 2 cables in extent, and very narrow, having a small patch of dry coral on its southern part. The Discovery anchored in 11 fathoms, soft ground, and had this shoal bearing East 2 miles, when the boat had from 5 to 7 fathoms rocks on another shoal, bearing S. 6° W. from the ship about a quarter of a mile, and breakers were seen from the mast-head bearing S. S. E., distant about 4 miles upon a third shoal, under which 18 proas were at anchor, and many eddies were seen around: extremes of the group of SCHARVOGEL ISLANDS then bearing from W. $15\frac{1}{2}$° S. to W. 15° N., the nearest island distant about 8 miles, and a high distant hill W. 45° N., observed lat. 3° 19′ 5″ S.

Scharvogel Islands.

Montaran Islands.

THE MONTARAN ISLANDS, lying off the N. E. part of Billiton, consist of three straggling groups: TOEKOEKEMOU, the N. Westernmost, lies nearest the N. E. point of Billiton, and appears as two islands till within 3 leagues of it. This highest of the Montaran Islands, by the observations of Captain Ross, is in lat. 2° 31′ S., lon. 108° $36\frac{1}{2}$′ E., bearing from the west end of Souroutou S. 6° W., distant 48 miles, and he made it 1° $22\frac{1}{2}$′ E. of the Island St. Barbe by chronometers. It has a high hill on each extreme, and, being low in the middle, appears like two small islands when viewed at a considerable distance; but it cannot be mistaken when you are 5 or 6 leagues to the northward, as none of the low islands near it are seen at that distance.

N. Westernmost, or High Saddle Island.

Contiguous isles and dangers.

Close to the north point of this High Saddle Island lies an islet covered with bushes, and they are united by a reef which extends about $1\frac{1}{2}$ miles to the northward: a reef projects also from the south point of the island about half a mile; and a small round island with a white beach, surrounded by a reef, lies about a mile to the westward of the High Saddle Island; and S. by E. from it about $2\frac{1}{2}$ miles there are three low islands, with apparently much broken water about them, and a dry sand-bank about 2 miles to the westward: there is also a high white sand-bank about 4 miles S. Eastward of the three last-mentioned islands.

About half-way between the High Saddle Island and the westernmost island in the next group to the eastward, lies a dangerous reef of rocks, very little above water, which appeared very shoal near the islands: another reef with a small white bank on it lies about W. by S. from the Eastern Montaran Island, and E. 60° N. from the low flat island of the middle group. All this part adjacent to these islands seems dangerous, and a ship should not borrow nearer than to bring the High Saddle Island W. $\frac{1}{2}$ S., or she may get into shoal water. The southernmost group of these islands is in about lat. 2° 35′ S., and when approached in September, 1809, by the Fox frigate, it appeared

Southern group.

to be inhabited, and the water very shoal around,* for the Malays were observed pushing a boat with poles, although 3 miles off the islands; other boats were also seen, with people upon the shore.

East Montaran Island, in lat. 2° 30¾′ S., lon. 108° 51¾′ E., by the observations of Captain Ross, and bearing from the west end of Souroutou S. 13° E., distant 50 miles, is about a third of a mile in extent North and South, and surrounded with a high sandy beach, as is likewise the next adjoining small island. An officer from the Discovery landed on the easternmost island, where he observed the latitude, and took the following bearings. Carimata from N. 2½° E. to N. 5° E., the peak N. 3¼° E; a Sand Bank S. 64½° E., which is about 3 or 4 miles distant from the island; the small, and nearest island S. 25¼° W.; the two hills on the High Saddle Island W. 1½° S., and W. 4½° S.; extremes of the easternmost island of the next group from S. 39½° W. to S. 42° W.; and two small distant hills S. 63½° W., and S. 65½° W., supposed to be on Billiton. The above bearing of Carimata Peak makes the easternmost Montaran Island 3¼ miles West of that peak, or in lon. 108° 51¼′ E., corresponding very nearly with the chronometers.

Easternmost Montaran Island.

Sand-bank seen by the Discovery.

The dangers near East Island seem, as yet, to be but imperfectly known; the ship Catherine, Captain Evans, was lost on a ledge of rocks to the eastward of the island, of which he gives the following account:—"At 2h. 15m. P.M. (Dec. 17, 1840) struck on a ledge of rocks, with East Island bearing W. ½ N., and Carimata Peak N. 4° W., distant from East Island 8 miles. This reef, which is formed of sharp coral rocks, extends N.W. and S.E. a cable's length, and the least water found on it was 2 fathoms. While aground, soundings were obtained in different directions; there were 4, 5, 7, and 9 fathoms about a hundred yards N.W. of the ship, and to the S. Eastward, a little less than a cable distant, no bottom with 20 fathoms; at half a cable, 9 fathoms, and a boat's length nearer the ship, 2¾ fathoms. Though a strong current was setting to the southward, there was no appearance of broken or discoloured water, nor any indication which would cause a careful navigator to apprehend danger." Capt. Evans places the reef in lat. 2° 31′ S., lon. 108° 59′ E.

Catherine Reef.

The ship Justina, of Batavia, belonging to Messrs. McLean, Watson, & Co., having been despatched to the wreck of the Catherine, came to an anchor about 2 miles to the westward of her, in 18 fathoms, with the centre of East Montaran Island W. ¾ N. 6 miles, and a shoal W. by S. 2 miles. This shoal, from its position, must have been the Sand Bank mentioned above, as seen by the officer of the Discovery; it was examined by one of the Justina's boats. About 100 yards all round the shoal, the depths were from 10 to 18 fathoms, shoaling suddenly towards it; the boat went over it, and had very irregular soundings, from 4 feet to 5 fathoms, and in the centre of the shoal there was a coral rock 3 feet above water. Shoal water was observed to extend about 1½ miles W. N.W. and E. S. E.

Betwixt two of the groups of the Montaran Islands, the Warren Hastings, of Calcutta, found a safe passage in 1789, and had soundings from 17 to 26 fathoms: when the extremes of the islands bore from E. ½ N. to S.W. by W., distant from the nearest 4 or 5 miles, a long reef of sand and breakers bore from N.W. to W. S.W. about three-quarters of a mile, near to which she had anchored in 7 fathoms in the night.

A passage between two of the groups.

* It appears to have been upon one of the reefs off these islands that the Abercrombie was lost, July 26th, 1812, a fine ship of 1,200 tons burden, belonging to Bombay, on her first voyage to China. She was steering N.W. by N. in the night, among the dangers that lie off the east coast of Billiton, although land was seen bearing N.W. at 3 A.M., and at 5 A.M. she struck on a reef with rocks dry on it, extending about a mile to the N. Westward, which the journal states to be in lat. 2° 29′ S., the centre of Billiton bearing S.W. by S.

Currents or tides in the Carimata Passage.

THE CURRENTS in the Carimata Passage appear to set mostly to the southward in the northerly monsoon, for many ships have found it almost impracticable to beat to the northward in that season; and these southerly currents also prevail to the westward of Billiton. The Grenville was nearly six weeks in February and March, 1815, getting through Gaspar Straits to the northward, and Captain Ross, of the Discovery, found a constant southerly current in the Carimata Passage in 1813; on February 15th, he was off Pulo Mancap, and from hence continued beating along the west coast of Borneo, and afterwards on the south and west sides of Carimata and its adjacent islands, until March 16th, when he got round the west end of Souroutou.

In the southerly monsoon, it does not appear to be so difficult to get to the southward, for there are regular tides along the west coast of Borneo, and also off the east coast of Billiton in this season, which seem to extend in some degree across the Carimata Passage, the flood apparently setting 12 hours to N. Westward, and the ebb about 12 hours in the opposite direction; the rise of tide about 9 or 10 feet on the ground, at full and change of moon, experienced by Captain Ross, in May, 1814.

The Snow Luconia left Mampava May 14th, 1776, passed to the West of Souroutou, anchoring when the current or tide was unfavourable, the wind generally from South to S. E.; June 6th, she passed a shoal above water, in about lat. 3° 25′ S., bearing East 3 miles, then in 21 fathoms, fine sand, probably the Discovery eastern bank, and June 9th, she arrived at Batavia.

Directions for sailing through the Carimata Passage.

If coming from the N.W. towards the Carimata Passage, and having approached Souroutou, pass the latter at the distance of 5 or 6 leagues, if you intend to pass outside of the Ontario Shoal. Having brought Souroutou to bear N. E., steer S. E. by S. and S. S. E., to give a berth to the Ontario Shoal; and keep the west end of Souroutou to the eastward of N. ¾ E., until past it, or 8½ leagues to the South of Souroutou; or sink the west end of this island from the deck of a large ship bearing about N. by E.; continuing this course, you will see the Montaran Islands if the weather is favourable; pass to the eastward of them at 5 or 6 leagues' distance. From this situation, a S. E. by S. course continued, will lead in the fair track, betwixt the Cirencester and Discovery Shoals on the west side the channel, and those shoals on the east side which extend S. S.W. from Pulo Mancap: you ought not, in this track, to borrow under 15½ or 16 fathoms towards the Mancap Shoals, nor deepen above 20 fathoms towards the dangers on the west side of the channel, although the soundings are irregular, and not a sufficient guide in some parts of the passage. If not certain of the longitude, the best guide is to borrow towards the coast of Borneo, to get a sight of the land, if circumstances admit, and after passing Rendezvous Island, haul out to the S. Westward to avoid the Mancap Shoals.

Directions for passing inside the Ontario Shoal, and past Mancap Shoals.

But the best track for ships bound to the southward, particularly in cloudy weather, is to pass inside the Ontario Shoal, by keeping within 3 or 4 leagues of Souroutou, until its western extremity is brought to bear N. ¼ W. or N. ½ W.; then observing to keep it to the westward of N. ¼ W., in steering to the S. S. Eastward, until you have passed the shoal. In proceeding to the southward, borrow towards the eastern side of the passage, where the soundings will generally be from 17 to 14 fathoms within from 10 to 7 leagues of the coast of Borneo, deepening in some places as you approach the shoals on the west side of the passage, but not always a certain guide; and when to the southward of Rendezvous Island, the depths will increase to 19, 20, or 21 fathoms irregular soundings, when about 10 or 11 leagues to the S. Westward of Pulo Mancap, which is as near as any large ship ought to approach the shoals, that extend far out from it in this direction, already described above.

Passage to the straits East of Java.

HAVING PASSED THE MANCAP SHOALS and reached about lat. 3° 50′ S., in soundings not less than 19 or 20 fathoms, a S. E. course may be steered to pass to the westward of Lubec, if bound through any of the straits East of Java ; as the wind prevailing sometimes at W. S.W. renders it necessary to approach the coast of Madura, to be enabled to round its eastern extremity, and proceed to the southward betwixt the islands Pondy and Galion. When through this passage, either of the adjacent straits may be chosen. Bally Strait, being narrow at the *northern* part, without safe anchorage, is seldom used. Although Lombock Strait is wider, the current runs generally strong through it to the northward, making the passage by it sometimes tedious and difficult. The Brunswick, Minerva, and Chesterfield were from the 15th to the 30th January, 1794, beating in this strait, and drifted about by the currents, before they cleared Banditti Island ; their people were also fatigued, and their sails beat to pieces by the squally weather. The Bellona in company, not sailing so well as those ships, could not get through ; she therefore bore away, passed round the north end of Lombock, and without any difficulty, proceeded to the southward through Allass Strait. This strait should be chosen in the North-west Monsoon, by ships which have proceeded through the Carimata Passage, and are bound out into the open sea by any of the straits near the east end of Java.

To sail from Mancap Shoals towards the Strait of Macassar.

When bound towards the strait of Macassar, and being in about lat. 3° 50′ S., clear to the southward of the extremity of Mancap Shoals, an E. by S. course will lead you along the south coast of Borneo, at a moderate distance from it, in soundings of 18 or 19, to 25 fathoms; do not approach it under these depths, until soundings of 12, 14, or 15 fathoms are got on the bank off Point Salatan.

Point Salatan. South coast of Borneo.

POINT SALATAN, described in the next chapter, bears E. ½ S. from the southern extremity of Mancap Shoals, distant 92 leagues ; and nearly mid-way between them lies Flat Point, in lat. 3° 31′ S., which, with some other parts of the coast, may, with caution, be occasionally approached to 8 or 10 fathoms in working. This coast is indented by several bays, fronted in most places by a bank of sand ; the great bay to the westward of Point Salatan is occupied by a remarkable shoal bank, which stretches more than 20 leagues about W. ½ N. from that point; and some of the shoal patches with 3 or 4 fathoms water on them, are 11 or 12 leagues off the coast. One patch, in lat. 4° 0′ S., is partly dry, with 16 fathoms near it, and the land of Borneo is just visible from it bearing N. E. ¼ N. Close to Point Salatan, on the west side, there is a channel of 12 and 10 fathoms water, stretching about N. by E., and decreasing gradually to 2 fathoms at the entrance of BENJAR MASSEEN RIVER, formerly a place of considerable trade, which was carried on with Benjar Masseen Town, situated 7 or 8 leagues inside the bar of the river. In the bight, about 3 leagues S. Eastward of the mouth of Benjar Masseen River, is Ross River, which stretches inland to the N. Eastward, and has excellent timber for ship-building in its vicinity. At this place, Captain J. C. Ross, with the assistance of the natives only, built the ship Borneo, of 420 tons, in 1819, in which he made several voyages to England, and she is considered to be a sound well-built ship. Tebonas River lies farther to the southward ; and there is another river 7 or 8 miles North of Point Salatan, with Pulo Dato fronting its mouth ; all these are on the east side the bay or channel leading to Benjar Masseen, the bar of which is in about lat. 3° 32′ S., lon. 114° 38′ E.

Benjar Masseen River. Ross River. Tebonas River.

Directions for Benjar Masseen River.

Captain Godt, commanding a Dutch vessel in the eastern trade, has transmitted the following directions for sailing into Benjar Masseen River, the bar of which extends 3½ or 4 miles from the entrance of the river to seaward, with 11 to 16 feet upon it at

high water, being about half a mile wide between the banks that bound it on each side; the eastern one is hard sand, nearly dry at low water; but the west bank is partly soft mud. The entrance of the river is formed by Tanjong Boorong on the east side, and Tanjong Bedatta Tooa is the outer point on the western side, the *inner* part of which, called Bearing Point by Captain Godt, being the visible extreme used as a mark in sailing over the bar. Bring Bearing Point N. 35° E. by compass, and Tanjong Boorong N. 58° E., you will then be on the outer edge of the bar, in 3 fathoms water; from hence steer N. 38° E., or N. E. ½ N. in 16, 15, 13, and 14 feet water, to bring Bearing Point N. 34° E., when Tanjong Boorong bears N. 66° E.; then steer N. 52° E., or N. E. ½ E., nearly in 15, 16, 18, and 20 feet, until Bearing Point bears N. 25° E., and Tanjong Boorong N. 76° E.; you are then inside the bar, and should steer N. 37° E., or N. E. ¾ N., or N. E. by N., for the mouth of the river, and clear of a narrow spit that projects a considerable distance from Tanjong Boorong to the westward. Bearing Point may be approached within 30 or 40 fathoms if necessary; from hence to the First Point, keep outside a transit line joining these points, as the mud-bank along that part is very steep. Avoid the spit that extends from Pulo Kacket to the southward, by not bringing the First Point to the westward of N. by W., and this point is steep to, only keep your yards clear of the trees in passing it: the channel from the First Point till past Pulo Kacket is narrow, from one to two cables wide, but the western shore is steep to, as far as the Second Point; from the latter, steer over to the Third Point, which is on the eastern shore, then keep close along this shore, and to Fort Van Tuil, so as the ship's side may just be clear of the trees and piles in rounding the fort, to avoid a shoal spit that surrounds the opposite western point. The latter point separates the river into two branches, the largest extending to the N.W.; and the other in a northerly direction, leading to Benjar Masseen, is very narrow, but has from 5 to 8 fathoms water all the way, and the shore is steep on both sides. Mid-channel is the best track to keep clear of the trees, and to avoid the eddy tides near the points.

BORNEO GREAT RIVER, *very little known*, is about mid-way between Flat Point and Point Salatan, or about 30 leagues to the westward of Benjar Masseen River, nearly in the bottom of a considerable bay, having Datoo Mandayee group of islands fronting its entrance, which is said to be very wide, and the river extends far inland, issuing from the Great Lake in the centre of Borneo, not far from Keeney Balloo.

EASTERN PASSAGE TO CHINA, THROUGH MACASSAR STRAIT.

PASSAGE THROUGH THE STRAIT.

General remarks on the route by the Strait of Macassar.

SHIPS proceeding from Europe, or from Hindoostan, towards China by the eastern passage, frequently adopt the route through the Strait of Macassar. Directions for the European ships to approach the straits East of Java are given in the First Volume of

this work; under the head of "Directions from St. Paul towards China by the Passages East of Java," &c., and also in the following section; and for the Hindoostan ships, in this Volume directions will be found, at the beginning of the section entitled, "Passage between India and the Strait of Sunda," &c.

Although some ships have made quick passages to the northward through the Strait of Macassar, others have been embarrassed, and greatly delayed by adverse winds and currents. The route by the Pitt Passage, and through the Gillolo Passage, or Dampier Strait, into the Pacific Ocean, may be considered *more certain*, particularly after the middle of November, when the North-west Monsoon prevails South of the equator. In part of December, January, and February, the latter route is certainly preferable, for adverse winds and strong currents setting constantly southward through the Strait of Macassar *in the two latter months*, ought to deter every ship from entering it when bound to the northward. Currents from December to March.

In the Anna, we rounded Pulo Laut January 16th, 1793, and did not reach Cape Donda until the 5th March; the wind being constantly from northward, with strong southerly currents, we were forty days gaining the distance of about 116 leagues. An American ship in the strait, at the same time, bound to Manila, considering the passage impracticable, returned to Batavia.

The Canada, bound from Madras to Macao with despatches, reached Cape Donda in February, 1792; after beating three weeks, and gaining no ground, she stood to the northward with a north-easterly wind, passed through a narrow channel in 5½ to 7 fathoms, mud, betwixt two of the islands on the east side of Sooloo, then through the Mindora Sea, between the Calamianes and Apo Shoal, and along the west coast of Luzon, having made a quick passage from Cape Donda to Macao.

The Laurel, from Bengal, bound to Macao, passed Pulo Laut March 2nd, 1788, went along the Celebes side of the strait, and reached Cape Donda 22nd, having experienced strong southerly currents about the equator. She left Cape Rivers March 24th, passed between Baseelan and Mindanao, then through the Mindora Sea, and did not reach Goat Island until the 17th April.

The Hindostan and Abergavenny were four weeks from Carimata to Cape Donda, which they passed December 16th, 1799.

OCTOBER AND NOVEMBER are considered proper months for the passage through Macassar Strait. Passages through the Strait in October and November.

The Arniston having cleared Lombock Strait November 1st, 1797, passed to the eastward of Hastings Island, Little and Great Pulo Laut; from the latter she stood over to the eastward for the Celebes side of Macassar Strait, where she got a southerly wind on the 9th, passed Cape Donda 11th, had constant easterly currents till the 21st, then in lat. 6° 18′ N., lon. 135° 50′ E., and made a very quick passage to Macao. She left the Cape of Good Hope September 26th, and passed through Lombock Strait October 31st, with a fair wind.*

The Dublin and fleet in October, 1798, were only a few days in passing through Macassar Strait. The Contractor and part of the fleet, which had separated, passed Pulo Laut October 14th, and cleared Cape Donda 19th.

Notwithstanding speedy passages have been made through this strait in October and

* The Coutts and Cirencester left Sapy Strait October 27th, the same year, proceeded by Salayer Straits and Pitt Passage, where the winds were variable, sometimes easterly, being too early in the season. They got clear of Dampier Strait November 17th, made the Bashee Islands December 6th, and reached Canton River about eight days after the Arniston.

November, and are generally expected in these months, the contrary has sometimes been experienced, particularly by the Woodford. This ship was off Pulo Laut October 13th, 1803, and proceeded along the Borneo side of the strait, experienced light airs and calms, with a current setting $1\frac{1}{2}$ miles per hour to the southward, which obliged her to anchor frequently in lat. 2° S. to 1° S. Having reached Cape Donda, November 9th, in lat. 0° 47′ N., she was carried back by the currents to lat. 1° 0′ S., where she anchored 16th, in $9\frac{1}{2}$ fathoms, mud, about 3 leagues off the Borneo shore. On the 19th, she anchored in $6\frac{1}{2}$ fathoms, with the S. E. point of Pamaroong Island E. N. E., and the opening betwixt it and the main, or entrance of Gooty River, N. N. E., distant 6 or 7 miles: the two cutters were sent to Gooty for rice, but could find no such place.* From hence, the Woodford proceeded to Passier, anchored there on the 22nd, and got 133 bags of rice, some sago and fruit; she sailed again on the 30th, found the southerly current still prevailing, which prevented her reaching Cape Rivers until December 24th; being two months and three days getting through the Strait of Macassar, excluding seven days she remained at Passier. Had she been on the Celebes side, *probably* the current would have been weaker, particularly near the shore; but the difficulty experienced by the Woodford shews that the passage to the northward through the Strait of Macassar is sometimes uncertain, even in the favourable season.

The ship William Money, after having reached Cape William, in company with the American ship Ogelthorpe, was drifted back by the southerly current to lat. 3° 46′ S., near Cape Mandhar, November 29th, 1833; this current continuing with faint variable airs, they relinquished the passage by the Strait of Macassar, and proceeded by the Pitt and Gillolo Passages. Light winds continuing, they did not reach Geby till December 25th, where they received twenty butts of water, and sailed on the following day in company with the Moira, for China.

The Royal George and David Scott left Malacca, October 26th, 1812, proceeded through the Carimata Passage, and having experienced light S. Easterly winds, did not reach Dwaalder Island till the 26th November; from hence, they had northerly winds and a southerly current, which obliged them to anchor frequently, and they did not reach Pamaroong Island till the 8th December; here a strong southerly wind fortunately commenced, which carried them to Siaö in 50 hours: but from the adverse winds and currents experienced by these ships, so early as November and the beginning of December, Captain Gribble, of the Royal George, considers the route to China by the Strait of Macassar at all times precarious. They passed to the eastward of the Philippine Islands, and reached Macao Road January 10th, 1813: had they adopted the Palawan Passage after leaving the Strait of Malacca, they would probably have arrived six weeks sooner in Macao Road.

To approach the Strait of Macassar from the southward.

SHIPS having come through Bally Strait in September or October, and being bound towards the Strait of Macassar, should proceed to the northward between Pondy and Galion; then giving a berth to the western extremity of the Kalkoon Isles and Shoals, may steer to pass on either side of Little Pulo Laut, as the winds may render advisable.

* Gooty, or Koote River's entrance, is a little to the southward of the above-mentioned island, but the town is situated far up the river. Captain Robert Scott, in 1797, had his vessel cut off by the Manila Helmsmen (who formed part of the crew), while at anchor off the entrance of Gooty River, and the European officers were killed by them. The commander being at the town when these pirates carried away the vessel, he was forced to remain at Gooty until the change of the monsoon; he was treated with hospitality, being known to the chief of that place, and he afterwards arrived safe at Malacca in one of the trading proas.

Those from Lombock Strait should steer N. N. Eastward, to pass betwixt the westernmost Pater Nosters and Hastings Island, or just in sight of the latter; then to the northward for the Two Brothers and Great Pulo Laut.

Ships from Allass Strait may steer N. N. W. and northward to make Hastings Island, and pass to the eastward of it, as in the case last mentioned.

Ships which come through Sapy Strait in the same months may pass either to the eastward or westward of the Postillions, as winds or other circumstances require; then proceed to the northward betwixt Tanakeka and the Tonyn Islands, giving a berth afterwards to the Spermonde archipelago of isles and shoals, which stretch N. Westward from the Bay of Macassar; but in this track great caution is indispensableon account of the dangers around.

SHIPS from HINDOOSTAN, bound to China by an Eastern Passage, ought, if possible, to sail in October or November, to be enabled to reach China in sufficient time to return down the China Sea by the common track. From Hindoostan to China by the Eastern Passage.

Those which sail from Hindoostan after the early part of December, if to proceed by an Eastern Passage, can hardly be expected to arrive at China in sufficient time to return down the China Sea with the North-east Monsoon, although some solitary instances to the contrary may occur.

Ships from Bengal, bound to China by an Eastern Passage, have the option of proceeding by Malacca Strait and the Carimata Passage, or to the westward of Sumatra, as circumstances require: although the route by Malacca Strait and the Palawan Passage, then along the west coast of Luzon, seems preferable for ships leaving Bengal during the early part of the North-east Monsoon, more particularly as they will probably reach China sooner by this route than by any of the circuitous Eastern Passages.

Those from the Malabar coast, Ceylon, or the southern parts of the Coromandel coast, may pass South of Java, then through any of the straits eastward of it: or, in time of peace, the track by Sunda Strait, then eastward between Java and Borneo, may be adopted, which is considered equally safe, and more direct than the route to the southward of Java, although the winds are steadier outside.* Having entered Sunda Strait, the track by the North Watcher, to the northward of the Thousand Islands, may be pursued; or they may touch at Batavia for a supply of water or provisions, when absolutely necessary.

SHIPS PROCEEDING EASTWARD, betwixt JAVA and BORNEO, ought to be prepared for *sudden* severe squalls, which frequently blow furiously during the strength of the North-west Monsoon, particularly in December and January, when the weather is generally cloudy with much rain. Leaving Edam Island in these months, steer about E. N. E. 40 leagues, if observations are not obtained, to be certain of passing to the northward of the reef that lies off Bumkin Island, and also to pass clear of Carimon Java; for in this season the current sets sometimes to the E. S. Eastward as far as Lubeck, or to the Solombos, then about E. N. E. towards the entrance of the Strait of Macassar. From Edam, Moresses Island bears E. 10° N., distant about 184 leagues; steering E. N. E. from the former, the depth increases to 28 or 30 fathoms Caution in steering eastward through the Java Sea. From Edam towards the Strait of Macassar.

* Ships from the Malabar coast or western parts of India ought not to attempt the passage through Malacca Strait. The Anna left Bombay October 22nd, 1806, proceeded by Malacca Strait and the Carimata Passage; and on January 7th, in Pitt Passage, she fell in with the ship Alexander, which came through Allass Strait, having left Bombay November 21st, or thirty days after the Anna.

at the distance of 40 leagues. From hence steering between E. by N. and East, depths from 30 to 34 fathoms will be found until within 40 or 45 leagues of Tanjong Salatan: steering on about E. ½ N., the depth of water will gradually decrease to 14 or 15 fathoms, when Tanjong Salatan is abreast, about 7 leagues distant. Care must be taken to avoid the Arrogant Shoal, in lat. 5° 12′ S., about 14 leagues to the northward of Lubeck.

COASTS, ISLANDS, AND DANGERS.

Tanjong Salatan; the adjoining coast.

TANJONG SALATAN, in lat. 4° 10′ S., lon. 114° 42′ E., by stars on each side the moon, or 26 leagues to the westward of Moresses, is the southernmost point of Borneo, and the high land over it, called Goonong Ratoos, or Hundred Mountains, appears like islands when seen 10 or 12 leagues off; this high land forms a ridge of peaked hills stretching East towards Pulo Laut, but close to the sea the coast is low and woody.

The coast hereabout may be approached to 9 or 10 fathoms, but 14 fathoms is a good depth to preserve in passing the Tanjong Salatan, and from thence eastward to Moresses it may be approached with caution to 7 or 8 fathoms: the former ought not to be passed at a greater distance than 8, or at most 10 leagues, for the Island Arentes, on the south side of the passage, is situated farther westward than generally represented; and to the westward of this island there is a rocky spot, on which an American ship struck, in January, 1794, according to the account of the pilot of that ship, which we fell in with a few days after in the Strait of Macassar; they had 18 fathoms just before and after striking, and one cast of five fathoms immediately after the shock: the track of 18 fathoms ought, therefore, to be avoided.

Little Pulo Laut Group.

LITTLE PULO LAUT,* or LAUROT ISLANDS, are mostly high, and form a group stretching nearly from lat. 4° 43′ S., to 5° 0′ S. Within half a mile of the southernmost there are 16 fathoms water, but the shore is rocky. The Laurel anchored in 20 fathoms on the N.W. side of the northernmost island, about a mile off shore, where she remained two days, and filled up her water. It was procured at some deep holes or wells, which received a stream of water, under the shade of some trees at the foot of the mountain: as the long boat was prevented by rocks from getting nearer than twenty yards of the beach, the people were obliged to carry the water to her in buckets; firewood was got close to the beach. Some breakers project a little way from the N.E. end of this island.

Water.

Moresses; isles and contiguous channels.

MORESSES, or MANEVASA ISLAND, in lat. 4° 25′ S., lon. 116° 3′ E., by lunar observations, lies about 8 leagues to the N. N. Eastward of the northernmost Little Pulo Laut. It forms like a pyramid in a regular peak at the summit; and it is the largest of a group of three small islands, having three or four islets or rocks above water contiguous to them; they lie near each other, the large island in the centre. The large island ought not to be approached nearer than 3 miles in the night, for the outermost islet or rock is about 1½ miles to the southward of it, and is on with the body of it bearing N. N.W. ½ W. The channels on either side Moresses are safe, with regular soundings in the northern one, of 14 and 15 fathoms water: the southern channel, betwixt it and Little Pulo Laut Islands, is 6 or 7 leagues wide, and more frequented than the other, with soundings of 18 fathoms in mid-channel. When passing

* *I. e.* Sea Islands.

through with a north-west wind, it is proper to borrow on the north side, towards Moresses.

DWAALDER ISLAND, in lat. 4° 12′ S., lon. 116° 21′ E., bearing N. 54° E., distant $7\frac{1}{2}$ leagues from Moresses, is woody, small, and low; being higher at the east and west ends than in the middle, it appears in the form of a saddle when viewed from the southward, and from its eastern part a reef projects about the length of the island. The passage to the northward of the Dwaalder is safe, with soundings of 13 to 15 fathoms; but the southern channel between it and the Two Brothers is generally used, being about $4\frac{1}{2}$ or 5 leagues wide, with soundings of 15 and 16 fathoms in mid-channel, and 13 or 14 fathoms near the Dwaalder. Dwaalder Island.

THE ROYAL GEORGE SHOAL, in lat. 4° $17\frac{1}{2}$ S., was examined by Captain Gribble, with the boats of the ship of this name, November 25th, 1812, having suddenly got into $4\frac{3}{4}$ fathoms water on it, when proceeding towards China by the Strait of Macassar. The shoal seemed to be nearly circular, about three-quarters of a mile in extent; when upon its centre in $4\frac{1}{2}$ fathoms, Dwaalder Island bore W. $\frac{3}{4}$ S. about 3 leagues, Button Rock N. $\frac{1}{2}$ E. about 7 miles, the south end of Pulo Laut N.W. by W., and the least water found on it was $4\frac{1}{2}$ fathoms. Royal George Shoal.

THE TWO BROTHERS, in lat. 4° 26′ S., lon. 116° 32′ E., bearing nearly East from Moresses, distant $9\frac{1}{2}$ leagues, and S. S. E. $\frac{3}{4}$ E. from the Dwaalder, are two small, low, round islands, connected by a reef, with several thick bushy trees on them, and are open with each other bearing E. by N. $\frac{1}{2}$ N. Two Brothers.

Contiguous to the south point of Great Pulo Laut there are three small islands, of moderate height; the BUTTON, a round islet or rock, is situated near the east side of the southernmost island, having 11 and 12 fathoms near it on the outside, which is the proper channel; these isles lie about 5 leagues N. Eastward from the Dwaalder.

THE INNER CHANNEL, formed betwixt the middle and southernmost of the small islands mentioned above, is rather too narrow for large ships, and should not be followed unless in a case of necessity, with a commanding breeze in daylight. The Snows Betsey and Experiment, bound to the N.W. coast of America, went through it February 16th, 1786; and Captain Betham, of the Wellington, from China, bound to England, came through it September 1st, 1815, from whose journal the following remarks are taken. At noon, after passing the Alike Islands, perceived at 3 P.M. that we could not weather the Button, and having the passage open to leeward between the southernmost and middle islands, bore away for it, and at 4 entered between the islands. A reef extends a considerable way towards the Button, and we shoaled regularly from 18 to $6\frac{3}{4}$ fathoms, which was the least water we had in the channel: a reef also stretches from the west point of South Island towards the Dwaalder a great way out, and a small isle, united by a ridge of rocks just above water to South Island, might in coming from the eastward be mistaken for the Dwaalder, being somewhat like it; the two northern islands also, when first seen bearing S.W. by W., have the appearance of the Two Brothers. When steering for the passage, borrow towards the northern island, as shoal water appears to extend from the N. E. end of South Island, a long way to the northward; when the small isle mentioned, contiguous to the west end of South Island, is shut in with the west point of the latter, haul to the southward, as a reef appears to project far out from the Inner Channel between the isles off the south end of Pulo Laut.

S.W. point of Pulo Laut, where we shoaled from 10 to 9, 8, 7, and 6 fathoms, keeping a lead going on each side. At half-past 5 A.M. we were through this passage, the Moresses bearing S.W. 5 or 6 leagues, which seems safe with a fair wind in the day, the narrowest part from land to land being apparently about a mile wide.

Macassar Strait.

MACASSAR STRAIT is about 115 leagues in length from the south end of Great Pulo Laut to Point Kanneeoogan, and generally from 45 to 35 leagues wide; except where it is contracted by the great projection of this point to 17 leagues at the north entrance. Between lat. 2° and 3° S., the strait is separated into two channels, by the archipelago of isles and shoals, called the Little Pater Nosters: the width of the western channel is 10 or 11 leagues, and the eastern one 15 or 16 leagues; but there are some dangers in the former, which is nevertheless much frequented, and is preferred to the other, having moderate depths along the coast of Borneo for anchoring occasionally, as far as lat. 1° N.; whereas, the coast of Celebes is steep to, in many places, and destitute of anchorage. The Arniston and other ships, which passed along the Celebes side in October and November, got speedily through the strait; and there is reason to think that this will generally be found the quickest route, for light southerly breezes prevail at times on this side, when the wind is different near the Borneo Shore; and when strong southerly currents prevailed in the middle of the strait in January and February, we found their velocity decrease a little, as we approached close to the Celebes Shore.

The Celebes coast.

To sail along the Celebes side of the strait, ships coming from the southward or westward, in the westerly monsoon, ought to approach the S. E. part of Great Pulo Laut, as if they were to proceed along the Borneo side, and thence, an E. by N. to E. N. E. course should be steered, to make the coast of Celebes at, or a little to the northward of, Cape Mandhar; a berth should be given to the Triangles, and the Union Shoal to the northward, and to those seen by the Laurel and Waller, to the southward: the lead should be kept going in this track, that, if possible, the approach to any of the shoals may be known. Ships coming from southward in the Easterly Monsoon, should steer to pass between Tanakeka Island and the S.W. part of Celebes, if they intend to touch at Macassar for refreshments.

Great Pulo Laut.

GREAT PULO LAUT is extensive, and from its south point a reef of breakers projects almost to the nearest island; the east coast seems free from danger, with mud soundings, generally of 13 to 15 fathoms about 2 or 3 leagues off, and 20 or 22 fathoms about 8 leagues off shore. Abreast the Alike Islands, contiguous to the shore of Pulo Laut, there are several small isles; the outermost is about 2 miles off, and bears West a little southerly from the Alike Islands. From the N. E. point of Pulo Laut, a reef projects, but the point may be rounded about $1\frac{1}{2}$ miles distant, in 8 to 10 fathoms, if ships intend to fill up their water in the deep bay formed betwixt the point and the north end of the island. This bay is sheltered from all winds but those between North and East, and the soundings are regular to the watering place under the high land on the west side, where a ship may anchor abreast of it in 6 fathoms about $1\frac{1}{2}$ miles off shore, with the N. E. point of the bay bearing E. by S. $\frac{1}{4}$ S., and a small island covered with trees S. E.; this island lies on the east side the bay, and has a shoal in front of it. Oysters may be got at the watering place, and the woods abound with wild hogs and deer.

Watering place.

The north end of Great Pulo Laut I made in lat. 3° 13′ S., the N. E. point in lat. 3° 23′ S., lon. 116° 41′ E., by chronometers and lunar observations. The east side of

the island is moderately elevated, sloping with a gradual declivity towards the N. E. point; the N.W. part is high land.

The narrow strait formed betwixt the coast of Borneo and this island is navigable by boats, or small vessels, but no ship should attempt to pass through it. Europeans ought to be cautious if they land on Pulo Laut, for Captain Alves, in the ship London, was cut off there.

THREE ALIKE ISLANDS, in lat. 3° 41′ S., lon. 116° 54′ E., by chronometers and lunar observations, bearing N. 47° E. from the Dwaalder, distant 15 leagues, named from their resemblance to each other, and called also Maragalongs, form a small group of three* islands, exclusive of an islet and some contiguous rocks; they may be seen from the deck at 5 or 6 leagues' distance. The channel between them and Pulo Laut is 4 and 5 leagues wide, and clear of danger, with regular depths of 16 or 17 fathoms in the middle, to 13 fathoms within a mile of the west side of the islands. These islands are also safe to approach on the outside, having from 20 to 22 fathoms water about 2 or 3 leagues off; but in lat. 3° 37′ S., lon. 117° 48′ E., there is a *dry* sand-bank† about 17 or 18 leagues to the eastward of them, with a coral bank of 6 fathoms or less, about 2 leagues S. S.W. from the sand-bank. The Alike Islands. Dry sand-bank.

The ship William Money, November 23rd, 1833, saw a dry sand-bank in lat. 3° 30′ S., lon. 117° 43′ E., by mean of three chronometers: the American ship Oglethorpe sent a boat to it, and found a coral reef project nearly half a mile from the sand-bank.

In the fair track, from between the Two Brothers and Dwaalder to the Alike Islands, the soundings are mostly 16 to 18 fathoms, from 4 to 6 leagues off Pulo Laut.

The LAUREL SHOAL, called BATO BONTONGA by the Malays, is in about lat. 4° 32′ S., lon. 117° 15′ E., distant 14 or 15 leagues eastward of the Two Brothers, by the journal of Captain Cheminant, of the Laurel. This shoal appears to lie on the edge of the soundings, which extend from it to Pulo Laut and the adjoining islands: the Laurel, March 2nd, 1788, steering eastward with light airs, in 35 fathoms, soft ground, shoaled suddenly to 7 fathoms, coral rock; anchored immediately, had $4\frac{1}{2}$ fathoms, and $3\frac{3}{4}$ fathoms were found by the boat a little to the southward under the ship's stern, the current then setting nearly one mile per hour in that direction; and to the eastward, the depth increased to 16 fathoms about half a mile distant. The coral rocks being sharp-pointed, and the ship pitching deep with the N. E. swell, when at 8 P.M. the weather threatening, and a breeze commencing at N. N. E., hove short, then cut the cable, but before the ship got headway had 3 fathoms rocks, and afterwards, several casts of 4 to 6 fathoms. Steering to the eastward the depth increased to 10 fathoms, then to 20, 30, and 35, soft bottom, next cast no ground with 50 fathoms. Laurel Shoal.

Captain Hunter got on the tail of this shoal, and made it in lat. 4° 35′ S., lon. 117° 19′ E., by lunar observation.

The Laurel Shoal is probably the tail of one of those seen by Lieutenant Davidson, of the Waller brig, April 29th, 1803, extending between lat. 4° 30′ and 4° 37′ S.; this vessel passed over the tail of a coral shoal at 7 P.M., on which the bottom was clearly seen, but she had only three casts, from 9 to 14 fathoms, then no ground 40 fathoms. About 3 miles farther to the southward she got on the edge of another shoal, *apparently dangerous*, the sharp-pointed coral rocks being seen under the bottom; she had from 8 to 15 fathoms on the edge of it, then no ground 22 fathoms. About 4 miles Waller Shoals.

* Called Pulo Ampat's, or Four Islands, by the Malays; the small islet making that number.

† Seen by Captain Hunter, in his voyage from Port Jackson to Batavia, in 1791. It is very small, and may probably be covered at high water.

more to the southward she got on the edge of a third shoal in 9 and 10 fathoms, rugged coral rocks, then no ground; to avoid these shoals, the sails were thrown a-back immediately when they were discovered. Upon the edge of the southernmost of the WALLER SHOALS, at noon, observed 4° 37′ S., lon. 117° 8′ E., by chronometers, and 117° 7′ E. by observations ☉ ☾ taken at 3 P.M., after running 4 leagues S. ¾ W. from noon. At this time the four islands Noesa Seras were seen from the mast-head, and at 6 P.M. they bore E. by S. ½ S., distant 4 leagues: they are low woody islands, may be seen 7 leagues, and by these observations are in lat. 5° 2′ S., lon. 117° 9′ E.

Noesa Seras.

The Triangles.

TRIANGLES, or LARRE LAREEN, are three very small isles, lying about mid-strait between Celebes and Borneo, the two northernmost in lat. 3° 1′ S., lon. 117° 53′ E. The other, in lat. 3° 5′ S., bearing S. ½ W. from them, is a small sandy isle, with a few bushes on it, one of these being very conspicuous in the centre, and breakers extending from this isle to the others. Regular soundings of 23 to 27 fathoms stretch from the east side of Pulo Laut to these isles, and the depths are 22 or 23 fathoms to the southward, and to the eastward of them, from 3 miles to 3 leagues distance: soundings also extend from them northward to the Little Pater Nosters.

Soundings and coral banks.

When 6 or 7 leagues to the eastward of these islands, there are no more soundings obtained in steering towards the coast of Celebes, but there appear to be one or two coral banks, the situation of which is imperfectly known. The Union had 7 and 8 fathoms on a coral bank, about 8 leagues to the eastward of the Triangles, in lat. 3° 2′ S.; and the Laurel had three casts of 16 and 17 fathoms, coral rock, then no ground 60 fathoms, with the land of Cape William rising in small hills, and bearing E. by N. Northerly, distant about 11 leagues. The Coutts and fleet, returning from China, in July, 1801, kept on the Celebes side of the strait, had soundings of 27 fathoms about 11 or 12 leagues to the south-westward of Cape William; and steering S.W. by S. about 13 miles, carried soundings from 25 to 30 fathoms, then no ground 40 fathoms. Although, possibly, the soundings obtained by those ships were on a continued bank of considerable extent, yet it is more probable that there are several patches hereabout; for that on which the Laurel had soundings seems to be a small spot, considerably to the northward of the bank where the Coutts sounded upon.

Macassar.

MACASSAR TOWN, or CASTLE ROTTERDAM, the chief settlement of the Dutch on the Island Celebes, is in lat. 5° 9′ S., lon. 119° 36′ E., by lunar observations. This place being encompassed with numerous shoals and small isles, the navigation towards it is thereby rendered intricate. If a ship find it necessary to touch here for refreshments, the best channel is from the S. Westward, betwixt the Spermonde Archipelago and the islands and shoals of Tanakeka, or that between the latter island and Celebes is the best if coming from the southward, keeping mid-channel towards the island; but a boat will be required to sound ahead if unacquainted, as the bottom is mostly coral in the channels, with great overfalls. Provisions and refreshments of various kinds abound at Macassar.

The anchorage is abreast the town in 7 or 8 fathoms, inside Great Lyly Isle and shoal; and the channel leading to it is from southward, by keeping near the shore to avoid the Lyly Shoal, but a berth must be given to a sunken rock that lies off the point about 4 miles S. S.W. from the town.

A rock in the channel leading to Macassar Road was explored, July 8th, 1813, and when upon it in 6 feet water, the house on Lyly and Rajah Bony's House were in one with Gon River bearing S.E., and two White Pillars E. N. E. By keeping Lyly open of Rajah Bony's House, on either side, you will pass clear of this danger, which was found to extend North and South about three ships' lengths, and about a

cable's length N.W. by W. and S. E. by E., with 2½ and 3 fathoms water at half a cable's length distance from it.

Cape Mandhar.

Cape Mandhar, in lat. 3° 35′ S. by the Arniston's observations,* and in lon. 119° 9′ E., is the western extremity of the great bay formed between it and Macassar, in which there is said to be some harbours or places of anchorage. The cape is high land, and all the coast of Celebes from thence northward is high and steep, destitute of soundings in most places, until very near the shore. Close to the sea, in some parts, the land is of moderate height, but all mountainous a little way up the country.

Trinder Shoal.

Trinder Shoal, seen in the brig Amboyna, by Captain John Trinder, is described by him as follows. At noon, October 12th, 1804, saw an extensive shoal bearing from South to N.W., the nearest part distant about a mile; no part of it appeared above water, but small breakers were seen in various parts of the shoal, the centre of which is in lat. 2° 59′ S., Cape Mandhar bearing from it S. E. by E., distant 18 miles.

If the latitude assigned above to this shoal, and the relative position of Cape Mandhar, be correct, it would place the cape in lat. 3° 9′ S.; but observations taken in the Arniston made it in lat. 3° 55′ S., which will place the shoal much farther to the southward than the latitude assigned to it above. Its relative situation, as given from Cape Mandhar, will be the best guide for avoiding this *apparently* dangerous shoal; as Captain Trinder seems not to have examined it closely, its existence is not very satisfactorily ascertained.

Lebaney Bay, watering place.

Lebaney Bay, on the west coast of Celebes, where H.M.S. Virginie watered in 1800, is in lat. 2° 40′ S., in approaching which, a village will be seen close to the beach; bring the centre of this E.N.E. and steer for it; the first soundings will be 70 or 80 fathoms, then suddenly 40 and 30 fathoms. When the north point of the bay bears N. ½ E., and the south point S. by W., the depths will be 28 or 30 fathoms about a quarter of a mile off the village at the head of the bay; and farther in the water shoals gradually to 20, 15, and 10 fathoms, sand and shells. The water is excellent at a place close to the beach, about a quarter of a mile to the southward of the village, where the above-named frigate watered in 24 hours; and the Malay chief promised to bring buffaloes and other stock, if she could have stayed three days in the bay.

Cape William; interjacent coast.

Cape William, in lat. 2° 34′ S., lon. 118° 58′ E., by chronometer, is a high pro jecting headland, having a large bay to the eastward, said to contain some islands and shoals; the isle near the cape is on with it bearing East. Point Kyl is 4 or 5 leagues nearly South from Cape William, being the southern extremity of the peninsula that forms the latter cape; and Point Onkona, or Anisone, about 6 leagues farther to the southward, projects a considerable way, by which a bay is formed betwixt it and Point Kyl, and another on the south side.

When Cape William bears East about 10 or 12 leagues distant, the nearest isle of the Little Pater Nosters is discernible bearing W. by N. ½ N., distant about 5 or 5½ leagues. These isles ought to be avoided, having many shoals in their vicinity, and among them.

Cape Temoel.

Cape Temoel, or Cape Samsa, is the N. W. extremity of a peninsula of high land, projecting a considerable way from the coast to the westward, by which a bayis formed on each side, but these bays appear to be destitute of soundings. The coast betwixt Cape William and this place is bold and steep; we could get no soundings at the

* The Sealeby Castle, bound to China, went along the Celebes coast, and on November 5th, 1814, had Cape Mandhar bearing East at noon, when the observed latitude was 3° 39′ S.

distance of 2 or 3 leagues off it, and *probably* there are none, except too close to the shore for any useful purpose. There is said, however, to be a place called Koilly, or Kayley, about 13 or 14 leagues to the northward of Cape William, famous for gold, sheep, &c.; but great caution is requisite in communicating with the inhabitants of this coast.*

There is a high table mountain in lat. 0° 56′ S., and a point of land stretching N. Westward from it, in lat. 0° 52′ S., which forms the western extremity of Palos Bay.

When Cape Temoel is first seen in coming from the northward it makes like islands, the land that connects it with the coast being lower than the hills which form it. The N.W. point of the cape, where it projects most, is in lat. 0° 1′ N., lon. 119° 26′ E., by observations taken in the Anna, when we were all the month of February endeavouring to round it to the northward; the south point of the peninsula that forms the cape is in lat. 0° 8′ S.

About 4 or 5 miles N. Westward from the cape lies a small round island, called the South Watcher, or Watcher by the Dutch, having a reef projecting from its south end; and from its N. E. end a reef of rocks and sand extends towards the Celebes shore, more than one-third of the distance between them. The Laurel stood in nearly mid-channel between the reef that projects from the south end of this island, and another stretching from the opposite bluff point of Temoel, then steered into the bottom of the bay within the island, where she was during the night, tacking every hour with the wind at N. N. E., but got no soundings. She kept near the northern shore of the bay when coming out in the morning, to give a berth to the reef off the N. E. end of the South Watcher. It is, however, not advisable to go inside this island; for the passage seemed to us unsafe, when at the distance of 3 or 4 miles outside.

Cape Donda,

CAPE DONDA, bearing N. 33° E. from Cape Temoel, distant about 19 leagues, is in lat. 0° 48′ N., lon. 119° 57′ E., by a series of observations of the sun, stars, and moon; and the observations of Captain Heywood make it the same.†

contiguous land.

The mountains over this cape being very high, and having a steep declivity to the water's edge, terminating in several bold head-lands, it is difficult to distinguish the cape. It is said that the ship Jane got soundings near the shore a little to the southward of Cape Donda; but it is certain that all this coast is very steep, for no sound ings are got close to the islands which line the shore between that cape and Cape Rivers; nor do there appear to be any in the bays with sandy beaches adjacent to the seven islands, or in those formed by Cape Temoel.

Seven Islands.

SEVEN ISLANDS, in lat. 0° 32′ N., the centre fronting the coast to the southward of Cape Donda, are flat, low, and woody, not easily distinguished unless when near them, except the outermost, called North Watcher, or Watcher. This island is in about lat. 0° 33′ N., distant 5 or 6 leagues from the shore, and appears not so large as the others, but may be seen 5 or 6 leagues from the deck: the channel betwixt it and the nearest long level island is about 2 or 3 leagues wide, and clear of danger.

Cape Rivers.

CAPE RIVERS, in lat. 1° 15′ N., lon. 120° 34′ E., by our lunar observations and chronometers, bearing N. 55° E. from Cape Donda, distant 16 leagues, has two small isles close to it, and the land that forms it having a regular declivity, with a gap not far from the extremity, gives the cape an isolated appearance when first seen. To the

* Capt. Woodward, who landed in the boat of an American ship, between Cape Temoel and Cape Donda, March 3rd, 1793, was attacked by the inhabitants, had one man killed, and the others made slaves; he escaped two years afterwards in a proa to Macassar, with two of the men that survived.

† Captain Mayne, of the Company's ship Atlas, made it in lon. 119° 58′ E., but Capt. Lynn's chronometers placed it several miles farther to the eastward.

eastward betwixt it and Trees Cape there is a projecting headland with white cliffs fronting the sea.

The coast betwixt it and Cape Donda forms a small concavity, and is mountainous at a small distance inland. To the eastward of Cape Rivers about 23 leagues, in the bay on the east side of Cape Candy, the river and village of Bool are situated; there is said to be anchorage and fresh water here, but some dangers project from the shore, and a rock covered with 3 fathoms water, on which an English ship struck.

Sailing directions along the Celebes side,

A ship proceeding along the coast of Celebes from Cape Mandhar to Cape Rivers should keep at least 2 or 3 leagues off, in light winds, to prevent being drifted near the shore; but when beating to the northward, against a steady wind and lee current, she ought to work near the coast in most places, particularly in the bay to the southward of Cape Temoel, where she will be out of the strength of the current.

and along the coast of Borneo.

THE BORNEO SIDE of the STRAIT has generally been adopted by ships, until they have passed the Little Pater Nosters: to proceed by this route, after having rounded the S. E. part of Great Pulo Laut, the channel on either side the Alike Islands may be chosen, as circumstances require, and a course steered from thence towards Shoal Point. The best track between them with a working wind is to stand out into 15 or 16 fathoms, about 4 or 5 leagues off shore, and it may be approached to 7 or 8 fathoms, about 2 or 1½ leagues distant: the bottom is generally soft mud, but in some parts overfalls may be got from 10 to 8 or 7 fathoms in the fair channel, about 4 or 5 leagues off shore.

Shoal Point.

SHOAL POINT, in lat. 2° 35′ S., lon. 116° 47′ E., by chronometer, and the mean of a series of lunar observations, bearing from the Three Alike Islands N. 6° W., distant 22 leagues, is the southern extremity of a piece of woody level land, about 9 leagues in length. Close to the point on the south side there is a deep inlet or river; and another in lat. 2° 58′ S., having an island close to the point that separates it from Pulo Laut Strait. A reef projects from Shoal Point in a southerly direction, having some rocks and bushes above water; but the flat that fronts the point may be borrowed on with safety to 6 fathoms on the east side, about 2 leagues' distance, the bottom being soft, and the decrease of depth very gradual. Steering a direct course along the coast, the water shoals about 2 fathoms abreast the point, and returns to the former depth when past it.

Ragged Point.

RAGGED POINT, or TANJONG ARES,* in lat. 2° 10′ S., lon. 116° 48′ E., by mean of many lunar observations, corroborated by chronometers, bears nearly North from Shoal Point, distant 8½ leagues; the land fronting the sea between them, being level and moderately elevated, is terminated to the northward by Ragged Point, which is bluff, with some gaps among the trees and surrounded by a reef: from hence, the coast takes a westerly direction, forming the great bay of Passier to the northward.

Shoals off this part of the coast.

Betwixt Shoal and Ragged Points is the most intricate part of the strait, on account of SEVERAL SHOALS contiguous to the passage, not well explored, nor easily avoided in the night; for the soundings are not sufficiently regular to guide a ship clear of the dangers.

On the southernmost of these shoals the Henry Addington grounded, November 12th, 1805, in 3¼ fathoms, coral, and the least water found on it was 2 fathoms, coral rock, Shoal Point bearing N.W. ¼ N., distant 6 or 7 leagues. When abreast this dangerous shoal, it is proper to keep within 4 leagues of the coast, and not bring Shoal Point to

* Called also Tanjong Lapar.

the westward of N.W. by N. or N.W. $\frac{1}{2}$ N., until to the northward of the Addington Shoal, which seems to be in about lat. 2° 50′ S.

Tides.

OTHER SHOALS, which lie in the offing, are 3 or $3\frac{1}{2}$ leagues off shore, not easily discerned in fine weather; for although nearly dry at low water spring tides, they have sometimes from 3 to 9 and 12 feet water on them, because the tide rises here 7 or 8 feet at full and change of moon. The Hercules examined one of these shoals with her boat, and found it composed of sand, coral, and stones, with from 3 to 9 feet water on it, and from 15 to 17 fathoms close to. This shoal bears from Ragged Point about S. 35° E., and N. 47° E. from Shoal Point, distant about $3\frac{1}{2}$ leagues off shore; for when the shoal bore from S. 39° E. to S. 66° E. about half a mile distant, Ragged Point bore N. 33° W., and Shoal Point S. 47° W. It appeared like a *long mark* occasioned by the reflection of a cloud passing the sun.

TWO SHOALS were seen in 1795, by the Bridgewater, True Briton, Woodford, and Albion, the southernmost of which appears to be very near, or part of, that examined by the Hercules; for they found it to bear S. 37° E. from Ragged Point, distant about $15\frac{1}{2}$ miles, and from Shoal Point N. 41° E., about the same distance. The other shoal bore from Ragged Point S. 41° E., distant about $3\frac{1}{2}$ leagues, and from Shoal Point N. 20° E.; no part of the shoals appeared above water at the time, but the sea broke upon them.

It appears to have been the last-mentioned shoal that was examined by Capt. T. Lynn, of the ship Barkworth, November 24th, 1816, who describes it thus:—From abreast of Shoal Point, kept about 6 miles off shore in coasting along, in soundings from 5 to 7 fathoms, till that point bore S. 32° W., and Ragged Point N. 22° W.; then at $9\frac{3}{4}$ A.M. steered N.E. by N. and N.E., and at 10 saw from the tops the North Sand dry, bearing N. $\frac{1}{2}$ E. Steered between the shoals as intended, leaving the above-mentioned one $3\frac{1}{2}$ or 4 miles on the larboard side, least water 6, and never more than 8 fathoms. Although the weather was favourable, did not see the other shoal; but its existence is certain, as I have landed on it in a former voyage. A little before noon I landed on the North Sand, and by good observation made it in lat. 2° 17′ 25″ S., Ragged Point bearing from it N. $44\frac{1}{2}$° W., Shoal Point S. 28° W., as near as could be ascertained, for the latter point was nearly sunk to the view, and appeared broken; the sand seemed to be 6 or 8 miles off shore, and about 9 miles distant from Ragged Point. This is a very extensive and dangerous shoal, having several distinct patches about it, with apparently deep water between them: one of these is a sand-bank, above water at times, to the N.W. about a mile, and the greatest extent of the danger is in this direction; in circumference, I should think it nearly 2 miles.

There seems to be another shoal betwixt these and the shoal on which the Henry Addington grounded to the southward; for when Shoal Point bore S.W. by W. $\frac{3}{4}$ W., and the low land near Ragged Point about N.W. off shore nearly 3 leagues, the Blenheim's boat had 15 feet, rocks, on a shoal bearing E. by N. from the ship.

Sand Banks.

Between the Little Pater Nosters and these shoals there are TWO DRY SAND-BANKS, bearing about E. by S. from those close to Ragged Point, with coral reefs near them, where the Resolution, Friendship, and other ships have grounded, and which render the passage outside these shoals very unsafe. H. M. S. Blenheim, with a fleet, by keeping too far in the offing between Great Pulo Laut and Ragged Point, got overfalls on coral banks, and saw several dangers, on one of which the Henry Addington grounded, as mentioned above, and the Blenheim narrowly escaped getting upon another.

Hannah Shoal.

HANNAH SHOAL *appears* to be a new discovery made by the ship of this name

September 22nd, 1829, in returning from China through the Strait of Macassar; for the position assigned to it differs from that of any of the other dangers adjacent to Ragged Point. When at anchor with this point bearing W.N.W. a little westerly, the shoal bore S. E. about $3\frac{3}{4}$ miles, with breakers on it, and it is distant about 20 miles from Ragged Point, the situation of the shoal by noon observation being in lat. 2° 17′ S., lon. 117° 2′ E., by chronometers.

Although several ships have passed outside these shoals without discerning any of them, it is nevertheless dangerous sailing here during the night, without much care is taken to avoid the dangers; for the soundings in some places are irregular, and not a certain guide when the depths are more than 10 or 12 fathoms. Under these depths the soundings are more regular towards the edge of the mud-bank that stretches along the shore from Pulo Laut to Ragged Point; for in standing on it, the water shoals in most parts very gradually to 6, 5, or $4\frac{1}{2}$ fathoms. Therefore, the best channel is within 2 leagues of the shore, inside the shoals, in soundings from 8 to 13 fathoms; and when Ragged Point is approached, the depth of 11 to 13 fathoms ought to be preserved, if a ship is under sail in the night, to avoid the outer shoals, and those adjoining Ragged Point. This is the narrowest part of the channel, being bounded on the inside by two *small sand-banks*, at a short distance from each other, and 2 or 3 miles distant from Ragged Point; the outermost bearing S. E. from the point. These two sand-banks are probably covered in very high tides, but in passing, a small patch of white sand above water is generally visible on each of them. Working from Shoal Point to these sand-banks, stand off to 13 or 14 fathoms in the day, and towards the shore to 7 or 6 fathoms: when near them, keep in 9 to 13 fathoms until abreast Ragged Point, and do not deepen above 17 or 18 fathoms until 4 or 5 leagues to the N. Eastward of that point.

Little Pater Nosters.

The Little Pater Nosters, called by the Malays Balabalakan (the name of the easternmost island), consist of an extensive group of 13 small isles, with banks of coral and sand above and under water, scattered among and around them. The southernmost isle is in about lat. 2° 50′ S., the N. Easternmost in lat. 2° 10′ S., lon. 117° 58′ E., and the N. Westernmost in lat. 2° 8′ S., lon. 117° 42′ E.,* or 54 miles East from Ragged Point by chronometers. On these two isles there is fresh water; they are all with low trees on them, and ought to be avoided, being dangerous to approach. The True Briton, coming from southward, got among them, and as the numerous shoals seemed to preclude any safe passage through, she was obliged to return by the track she entered, after a delay of several days.

The N. Western and Western isles ought not to be approached so near as to be discernible from the mast-head, for they are fronted by sand-banks, with dangerous coral spits projecting out 7 or 8 leagues. Returning from China in the Anna, we made the N. E. isle in July, 1792, steered to the westward, keeping 4 or 5 leagues off the isles, and got ground 34 to 14 fathoms, coral rock, when the N. Westernmost isles were in sight from the top, bearing South. Continuing to steer westward for the coast of Borneo, we had great overfalls, from 30 and 40 to 5 or $5\frac{1}{2}$ fathoms on the coral banks. When two of the N. Western isles were in sight from the mast-head, bearing about S.E., nine dry sand-banks, with a few bushes on two of them, were seen bearing from South to S. E. by S., distant 7 or 8 miles; passed then over some spits of 5 and $5\frac{1}{2}$ fathoms, the bright coral rocks under the bottom having a dangerous appearance; and some of the patches were thought to have very little water on them. Sand Banks.

* Captain Heywood made the N. E. and N.W. isles in the same latitude, and by chronometers exactly in the longitude above given.

At noon, observed lat. 2° 6′ S., the land of Borneo visible from the deck, bearing W. by S. ½ S., when two of the westernmost isles in sight from the mast-head were on with the body of the sand-banks, bearing about S. by E.; at this time, deepened to 40 fathoms, afterwards had no ground at 50 fathoms. Steered 2 miles to the westward, and got ground 36 fathoms, the depth then regularly decreasing, over a bottom of mud and gravel, to 20 fathoms, when Ragged Point was seen from the mast-head bearing W. S. W. about 8 leagues.

The northernmost sand-banks are in lat. 2° 7′ S., distant about 3 leagues to the westward of the nearest isle.

Directions for avoiding the banks.

To avoid these dangerous coral banks, a ship coming from northward ought not to cross the parallel of lat. 2° S. until she is well in with the coast of Borneo, in 20 or 18 fathoms. If leaving Ragged Point, she ought not to stand off shore to more than 20 or 22 fathoms, until she is to the northward of the same parallel: and then the strait is clear from side to side.

Passier Road and River.

Passier River (the entrance), in about lat. 1° 54′ S., is situated near the bottom of the bay, about 6½ leagues N. Westward from Ragged Point; the anchorage is in 4½ or 5 fathoms, 3 or 4 leagues off shore, to the northward of the river. There are some shoals in the south part of the bay, betwixt Ragged Point and the river, to avoid which, ships bound to Passier should get into the latitude of the anchorage before they approach near the shore, and steer West for it. The town is 6 or 7 leagues up the river, and supplies may be got there in case of necessity; but small ships must be guarded against any attack, as several ships have been cut off at Passier and other parts of this strait.

At the N.N. part of the bay is the wide entrance of Passier Lama, or Old Passier; and all the land is low and woody close to the sea, but hilly in the country.

Pamaroong Island, and adjacent coast.

Pamaroong Island, or Dondrekin (the south point), is in lat. 0° 54′ S., lon. 117° 36′ E., by lunar observations and chronometers, bearing from Ragged Point about N. 32° E., distant 30 leagues; and it is the southern extremity of the *long*, *low* island named as above, separated from the coast of Borneo by a narrow channel, appearing like the mouth of a river, when viewed from southward. Gooty Town lies far inland from hence, as already mentioned in a note at the beginning of this section.

About mid-way betwixt Passier Bay and this place the coast forms Baleekpappan Bay, and near the sea is low and woody, with several detached mountains inland, one of which is called Baleekpappan Peak: along this part of the coast the depths are 25 to 30 fathoms about 4 or 5 leagues off, decreasing gradually towards the shore.

From the south point, Pamaroong Island stretches about 10 leagues to N. N. E. and northward, having several indentations or small inlets on its eastern side, and is fronted by a reef which surrounds the outer parts of the island. The depths decrease regularly over a muddy bottom to the edge of the reef, at the southern parts of the island; but to the northward there is deep water near it.

Dry sand-bank.

A dry sand-bank, in lat. 0° 52′ S., lies about 2 miles distant from the S. E. part of the island, on which the Betsey and Experiment grounded in the night. The fleet bound to China in 1799 anchored here, December 12th, and the boats found the depth decrease regularly to the sand-bank, which may be approached occasionally to 10 or 12 fathoms. It extends N. E. by E. and S.W. by W. about two-thirds of a mile, but at high water spring tides is not dry more than 50 yards across, for the water rises at those times 8 or 9 feet.

Tides.

The freshes from the rivers on this coast carry large drifts of trees into the strait, which frequently appear at a considerable distance like vessels under sail, or small floating islands.

To the northward of Pamaroong Island there are no soundings along the coast of Borneo, in the great bight between it and Point Kanneeoongan, except very close to the shore; and the coast in this part is seldom approached.

To sail from Ragged Point to the northward.

Having passed Ragged Point, steer towards the south end of Pamaroong Island, keeping along the coast in soundings of 16 or 18 fathoms, which will increase to 25 and 30 fathoms as you proceed to the northward, and the depths are 28 or 30 fathoms about 4 leagues off the south end of the island. With a steady S. E. wind, you may keep farther out, to give a good berth to this island; for, excepting the reef and sand-bank contiguous to it, the strait is clear of danger from side to side, to the northward of lat. 2° 0′ S.

Point Kanneeoongan.

Tanjong Kanneeoongan, in about lat. 1° 5′ N., lon. 119° 10′ E., is the extremity of a narrow peninsula of high even land, which extends nearly 20 leagues eastward from the other land of Borneo; and the north entrance of the Strait of Macassar, formed between it and Cape Donda, is about 17 leagues wide. Contiguous to the point there are two small isles, and another isle of middling height, covered with trees, about 2½ leagues off the land, on the south side of the peninsula, having a safe channel betwixt it and the shore. No soundings are obtained here, nor within 1 or 2 miles of the coast to the southward and westward of the point. On the south side of this peninsula no southerly current is experienced when it is running strong into the strait outside, there being an eddy under it, similar to that under Cape Temoel on the opposite coast.

Circumjacent isles and coast.

To the northward of Point Kanneeoongan, about 3 leagues distant, there is a small isle with a conspicuous beach; and in the same direction the Bomige or Haring Isles lie, in about lat. 1° 48′ N.; these are two small isles, near and on with each other, bearing W. 14° N. The body of the large island Maratua, or St. John, is *said* to bear about N. by E. ½ E. from Point Kanneeoongan, extending from lat. 2° N. nearly on the meridian, to lat. 2° 24′ N. The Jason snow passed inside of it and the isles contiguous, in 1774, and found soundings near the coast of Borneo to the westward of Haring Isles, with several other isles and shoals fronting the coast: but the whole of the coast, embracing the great concavity between Point Kanneeoongan and Unsang, in which are several bays, with groups of small islands fronting it in some places, is little known to Europeans.

St. John and Haring Isles.

St. John and Haring Islands were formerly placed in a N. N. Westerly direction from Point Kanneeoongan; but Captain Forbes, on his passage from Manila towards Boston in June, 1829, passed near these islands, and describes them as follows:—June 7th, with the wind at eastward, made St. John Island early in the morning, and passed along the edge of apparent shoal water, which connects the *two* Haring Islands, just weathering the latter. St. John Island (eastern part) bears from Point Kanneeoongan N. by E. ¾ E., and this island, or group of islands, is connected with Haring Islands by a well-defined line of green water, having some dry patches upon it. By a good observation taken near Haring Islands, made them in lat. 1° 50′ N., and bearing North a little easterly from Point Kanneeoongan, distant 43 or 45 miles: they are two small low islands, separated 1½ or 2 miles from each other, but connected by green water, apparently shoal, and are in a transit line bearing E. by S. and W. by N.

CURRENTS.

Currents.

THE CURRENTS in the Strait of Macassar run more frequently to the southward than in the opposite direction: from November to April, particularly in January

and February, the current runs with great strength in that direction, abating generally in March. During the Southerly Monsoon, from April to September or October, there is frequently a weak current setting through to the southward, in opposition to the wind which then blows into the southern part of the strait from S. S. E. or S. Eastward. This southerly current is not so prevalent at the north entrance of the strait; for a N. E. current is often experienced about Cape Donda or Cape Rivers, in the Southerly Monsoon, although the currents and winds may be considered variable during that season.

Some ships have experienced a current setting into the strait on the east side of Pulo Laut, during the Southerly Monsoon; but ships which sail tolerably seldom find much difficulty in working round the island in that season, for in general the current is weak, and sometimes it runs to the southward.

In October, November, and December, the current sometimes sets through the strait to the northward, particularly in October; but it has been found in some years to set southerly in November and December. October is the best month for ships proceeding through the strait, when bound by the eastern passage to China; November and part of December is also reckoned a favourable season; but the passage through this strait ought never to be attempted in January or February, nor *probably* after the beginning or middle of December.

PASSAGE FROM THE STRAIT OF MACASSAR, BETWEEN MINDANAO AND CELEBES, INTO THE PACIFIC OCEAN.

Currents between Mindanao and Celebes.

THE CURRENT runs mostly in from the Pacific Ocean, between Mindanao and Celebes, to the westward or S. Westward, in both monsoons; but near the land it changes at times and sets to the eastward, particularly near the north coast of Celebes an easterly set is frequently experienced in October or November, and sometimes in December.

Betwixt the easternmost of the Sooloo Islands and the south end of Mindanao the current is liable to great changes; when setting sometimes 2 miles per hour to the westward it suddenly abates and runs equally strong to the eastward; at other times there is little or no current. Ships which steer from Cape Rivers for the south end of Mindanao are generally delayed by light winds and calms when they approach the latter, and meeting a S. Westerly current about the Serangani Islands, they are frequently drifted to the southward as far as Sangir, or even to Siao, before they can get through any of the channels between the islands.

Those which endeavour to make a direct course from Cape Rivers to Sangir or Siao, and then proceed through any of the contiguous channels, will generally make their passage much quicker than the former. It was formerly the practice to approach the coast of Mindanao, in order to counteract the S.W. current, and to be enabled to give

a good berth to the north end of Morty, with the prevailing N.E. winds: but there is seldom any difficulty experienced in getting round the north cape of Morty,* even in ships which pass to the southward of Siao; because an eddy current sets sometimes out of the Molucca Passage to N. Eastward, whilst among the islands adjacent to Mindanao the current is running to S. Westward.

In September, October, November, and December, favourable passages have been made from Cape Rivers to Sangir and Siao, and from thence to the northward of Morty; which tract seems preferable to the circuitous route by the coast of Mindanao.

THE NORTH COAST OF CELEBES is in general high bold land, and in most parts may be approached within a few miles; but ships ought to keep well out from it, unless they intend to touch at MANADO for refreshments. This is a bay and village in about lat. 1° 28′ N., situated on the west side of the N. E. end of Celebes, having a group of islands fronting them to the northward. There is anchorage in this bay, and the Dutch have a resident at the village, the natives here being more hospitable than those who inhabit the western coast. Rice is exported from Manado to the Molucca Islands, the adjacent country being productive in that grain. *Manado, North coast of Celebes.*

Kema village, in lat. 1° 22′ N., lon. 125° 19′ E., by chronometers, situated on the east side of Celebes, nearly opposite Manado, has also good anchorage in the road, in 10 or 12 fathoms, with Mount Klobat bearing N. 36° W., and the Sisters N. 28° E., about a mile off shore; the depth from thence gradually decreasing to the village, where good water and other refreshments may be procured. About 5 miles N. E. of Kema lies the south entrance of the Strait of Limbe, where shelter from S. E. winds and good anchorage are found, when these winds blow into Kema Road. The tides rise 5 or 6 feet here, and contiguous to the N. E. part of Celebes. *Kema.*

The Strait of Limbe, formed betwixt the Island Great Limbe and the contiguous N. E. part of Celebes, is very narrow and intricate in the middle, where there is an island encircled by a reef, which occasions an eddy or whirlpool; and the tides being very strong, render the passage through the strait not advisable in a large vessel. Close on the west side of this strait rises the highest peak of the Sisters, which with the contiguous mountains, are very conspicuous in passing near the N. E. end of Celebes. The southernmost of these, called Mount Klobat, may be seen about 30 leagues. *Strait of Limbe.*

BANCA ISLAND, in about lat. 1° 52′ N., lon. 125° 24′ E., by the chronometers and lunar observations of Captain Heywood, corresponding with those of other navigators, fronts the N. E. point of Celebes, having other islands near it to the westward; this group lies betwixt the north part of the Strait of Limbe and the islands that front Manado Bay. Banca is hilly, and of middling height; one of the islands to the westward is flat table land, while another has a high peak on it; the latter is the northernmost of the group off Manado Bay. Betwixt the Celebes shore and these islands there is a safe channel, called Banca Strait, leading from the north entrance of the Strait of Limbe to the anchorage in Manado Bay. *Banca; neighbouring islands and channels.*

The extreme point of Celebes is called Cape Coffin, and the whole of the islands

* Indifferently sailing ships have in some seasons been retarded two or three days in getting round, when brisk N. E. winds prevailed, with a considerable swell against them: others often get quickly round: the Sulivan passed to the southward of Siao December 11th, 1792, had an easterly current of 3° 16′ from Cape Donda, which continued till in lat. 6° N., lon. 135° E., on the 20th, being set in nine days from Siao 4° 34′ to the eastward of account, or nearly 8° after leaving Cape Donda.

that stretch from it to Manado Bay, forming the Strait of Banca, are sometimes called Banca Islands.

Bejaren Island and channel.

BEJAREN ISLAND, in lat. 2° 6′ N., distant about 5 or 6 leagues N. Eastward from Banca, is of moderate height, terminating in a peak at the summit. The channel betwixt it and Banca appears to be 4 or 5 leagues wide, safe for large ships; and it is the southernmost channel* amongst the chain of islands, situated between the N. E. end of the Celebes and the South Point of Mindanao.

Tagolanda Island and channel.

TAGOLANDA ISLAND, in about lat. 2° 23′ N., lon. 125° 36′ E., bearing from the north part of Bejaren about N. ½ E., distant 4 or 5 leagues, has a high conical peak, and is of considerable extent; it is fronted by the Island Roang on the S.W. side, and by the low level Island Passig on the west side; these lie at a small distance.

The channel between Bejaren and Tagolanda is 2½ or 3 leagues wide, and clear of danger; the Hope passed through it in 1806, and other ships which have fallen to leeward of Tagolanda have proceeded by it at various times. The north end of Tagolanda is in about 2° 27′ N.

Siao Island and channel.

SIAO is an island of greater extent than Tagolanda, and is rendered very conspicuous by a high conical volcanic peak, in lat. 2° 43′ N., lon. 125° 35½′ E., by the chronometers and lunar observations of Captain Heywood. About 3 leagues' distance from the west side of Siao lies the small island Makalara, and on the east side lies Mandang, with other contiguous isles; some rocks also project from the S.W. point of Mandang, betwixt which and the S. E. point of Siao there is an opening, about a mile wide. When the east end of Makalara was on a transit line with the N.W. point of Siao, they bore E. 20° N., the south extreme of Siao bearing East.

The S. E. point of Siao is in about lat. 2° 40′ N., bearing N. ¼ W. about 13 miles from the N. E. point of Tagolanda; the channel between them, being 3 or 3½ leagues wide and clear of danger, is much frequented by ships proceeding to the eastward.

Sangir.

SANGIR, or SANGUEY, bearing from Siao about N. by E. ½ E., distant 12 or 13 leagues, extending from lat. 3° 21′ N., nearly in a N. N.W. direction, to lat 3° 46′ N., is of moderate height at the southern part, but the land is formed of high mountains to the northward. There is said to be a harbour on the east side, formed by the adjoining small isles, several of which are at a considerable distance from Sangir; contiguous to the southern part there are other islands. The western side is indented by several small bays, with soundings of from 40 to 60 fathoms, about 1 and 2 miles off shore; and it is clear of danger, but the bottom is mostly coral. There is

Watering place and anchorage.

a small river or watering place in a bay situated in lat. 3° 28′ N., lon. 125° 44′ E. by chronometers and lunar observations; here ships may anchor about a mile off shore, in from 50 to 60 fathoms, with a light anchor, and procure poultry and vegetables from the native inhabitants of the adjacent habitations, the islands being cultivated in many places.

The Royal Charlotte anchored with the kedge in 58 fathoms, abreast a village bearing N. 70° E., the piece of land like an island, but joined to the main island, N. 45° E., distant 1½ miles; a point of land N. 2° E., distant 3 or 4 miles; north-

* H M.S. Imperieuse, with a convoy from Malacca Strait bound to Amboina, worked through this channel in the night, November 9th, 1800, then proceeded through the Molucca Passage, and arrived on the 21st at Amboina.

western extreme N. 20° W.; the point of an island off the south end of Sangir S. 36° E., and the body of the westernmost Passage Island South; the watering river was then a little to the southward of the land resembling an inland.*

Tides. The tides run to the northward and southward along this side the island about 2 miles per hour, and rise 6 or 7 feet. Long boats should go into the river about a quarter flood, to get filled and clear of it before high water, for the ebb runs out quick, and will soon leave the boats aground.

Karakita, or Passage Islands and channels. KARAKITA, or PASSAGE ISLANDS, consist of four or five islands, and several rocky islets, lying betwixt the south end of Sangir and Siao, which separate the channel into two branches. The westernmost Passage Island, or Karakita, is high, and the eastern one, called Pala, projects out on a low point to the eastward; the channel betwixt these islands and the south end of Sangir is 3 or $3\frac{1}{2}$ leagues wide, and clear of hidden danger to ships keeping nearest to Karakita, as islets and rocks lie near the Sangir shore to the westward of its south point, not easily seen in the night. The channel betwixt the Passage Islands and Siao is considered dangerous in the night: the fleet bound to China, steering through it November 19th, 1807, when the weather cleared up at 11 P.M., saw the land ahead, and on both bows extending from N. N. E. to four rocky islets bearing E. S. E.; they then hauled off S. E. until close to Siao, and passed to the southward of the rocks about the distance of $1\frac{1}{2}$ miles. These four rocks lie about N. by E. from Siao, nearly mid-way between it and the nearest of the Passage Islands, one of which is called the Quoin. The north end of Siao must be borrowed on pretty close to avoid them, but the channel to the southward of that island is preferable in the night. The David Scott, January 4th, 1811, passed to the North of Siao in the night, within 2 miles of the southernmost Passage Island, and saw lights on them. Ships having approached Sangir, may either proceed to the northward or southward of the island, as seems most eligible; if the latter route be pursued, they ought to haul close round the south end of Sangir, to be enabled with the N. E. wind to weather the rocky islets bounding the south side of the channel, particularly as a S.W. current may often be expected. To sail betwixt the islands and Sangir.

Rabbit Island and rocks. The easternmost of these islands on the south side the passage, called the Rabbit, or Haycock, is 5 or $5\frac{1}{2}$ leagues to the south-eastward of the south end of Sangir, and nearly due South of the outer island that fronts the east side of Sangir. There are two small islets or rocks to the eastward of the Rabbit, and others to the westward; several of them are small spiral rocks, and some appear like haycocks.

The Walsingham, December 7th, 1793, fell to the southward of Karakita, and pushed through between the second and third islands to the southward of Sangir. At noon, observed lat. 3° 9′ N., Siao Peak bearing S. 9° W., an island S. 63° W., another S. 4° W. to S. 23° E., one N. 37° E. to E. 4° S., one N. 25° E., one N. 8° W. to N. 16° W., Sangir North to N. N. E., and rocks ahead, bearing S. E. by E. $\frac{1}{2}$ E., distant 3 or 4 leagues; the current setting strong E. S. E. This seems an intricate narrow passage which the Walsingham went through, and ought not to be chosen; for, there

* The Royal Charlotte and Cuffnells watered with their long boats in the river without difficulty, whilst they remained here, February 17th and 18th, 1800. The Cuffnells anchored in 60 fathoms with the mouth of the river bearing E. by N. 2 miles, distant $1\frac{1}{2}$ miles from the point that forms the north side of the bay. The Woodford, January 26th, 1795, anchored here, and got plenty of poultry and fruit in exchange for coloured handkerchiefs, knives, &c., but she lost eleven casks in attempting to water; by which it appears that there is a considerable surf beating on the shore at times.

being no soundings near these rocks or islands, a ship is liable to be drifted upon some of them by the currents, during light airs or calms.

Small Isles between Sangir and Mindanao.

There is a CHAIN OF SMALL ISLANDS, extending from the north end of Sangir in a northerly direction to the south end of Mindanao, having several safe channels among them. Some of these, which front the north end and N. E. side of Sangir, are only islets or rocks high above water; to the westward of an island that bears N. by W., about 4 or 5 leagues from Sangir, the Louisa Shoal is situated.

Louisa Shoal.

There is a good channel outside the isles adjoining the N. E. part of Sangir; but caution and a strict look-out is requisite in the night, when passing near or among any of these rocky islets. The northernmost isles of this chain, called Obtuse Cone, Flat Island, Broken Island, and Three Hill Island, lie directly to the southward of the Serangani Islands, having a safe channel between them and the latter.

Serangani Islands.

THE SERANGANI ISLANDS, distant 4 or 5 leagues off the south point of Mindanao (called sometimes Serangani Point), consist of two considerable islands extending from lat. 5° 20′ to 5° 31′ N., and the high peak on the westernmost is in lon. 125° 32′ E. by chronometers, bearing about South from the south point of Mindanao. These two islands lie E. N. E. and W. S.W. of each other, and the easternmost, which is by much the lowest, has a hill on its south end: there are soundings on the N. E. side of the westernmost island, and also contiguous to the north end of the other, in the passage betwixt it and the small island Linitan; but none in the channel between them and Mindanao. Linitan is a small, low island, distant about 3 miles to the northward of the eastern Serangani Island, and has a reef projecting from its north and south points a little way, and also to the eastward.

Captain J. Hunter, the late Admiral Hunter, anchored at the Serangani Islands in 1791, returning from Port Jackson; and the Waaksamheyd snow, in which he and the crew of H. M. S. Sirius were passengers, was assaulted by the natives, from a misunderstanding between the master of the vessel and the Rajah of the place.*

Tulour Islands.

THE TULOUR, or SALIBABOO ISLANDS, are of considerable size, and moderately elevated, being three in number, with some contiguous small isles. Kabruang, the southernmost island, has a peaked mount on it, and its south end is in lat. 3° 47′ N., lon. 127° 11′ E., by Captain Balston's chronometers, in 1816, measured from Lombock Peak; and it bears East from the north end of Sangir, distant about 28 leagues. Salibaboo or Lirog, to the N. Westward of Kabruang, has on it a table hill; and on the east side, fronting Kabruang, the bay and road of Salibaboo is situated, having irregular soundings of 10 to 20 fathoms, rocky bottom, near the shore, and from 20 to 40 fathoms, sand, about 1 or $1\frac{1}{2}$ miles off.

By a plan of these islands drawn by Captain W. Greig, who visited them during a trading voyage from Bengal, it appears that the small harbour at the bottom of Salibaboo Bay, called Leron Harbour by Captain Forrest, is called Salibaboo by the natives. Sailing in for the road by the South Channel, betwixt Kabruang and the Point of Salibaboo, a berth must be given to a spit that projects rather more than half a mile from the shore, about half-way betwixt the point and harbour, on which the water shoals from 7 to 3 fathoms. The harbour is easily known by the houses and coco-nut trees, but *seems* not adapted for large vessels: the best anchorage in the road,

* The inhabitants of these, and the other islands near the coast of Mindanao, are of hostile and treacherous character.

is from 15 to 30 fathoms, sandy bottom, about a mile off shore; for farther in, the bottom is rocky in some places.

From the N. E. point of the island a spit projects, with 30 or 33 fathoms near it; which depths continue round the point, close along the north side of the island to the village called Leron by the natives, which stands 1½ or 2 miles to the north-westward of that point, and fronts the south end of Tulour. There are two small islands off this village, where it is *said* ships may anchor in safety betwixt them and the village; but *probably* this is too confined an anchorage for large ships, except in a case of necessity: at the village of Leron a ship may get supplied with hogs, goats, fowls, sweet potatoes, and coco-nuts, at a cheap rate. The natives seem civil, and prefer old iron, coarse red handkerchiefs, and coarse white cloth, to dollars. The natives of Karkalang seem also friendly, and here vegetables and other refreshments may likewise be procured; and there is a safe channel betwixt this and the other islands to the north-eastward. Supplies.

Tulour or Karkalang, the largest and northernmost island, extends nearly 9 leagues North and South, or from lat. 4° 0′ to about lat. 4° 27′ N., and, as well as the others, is inhabited. The northern part of this island is said to be lined with a dangerous reef, which projects several miles from the north extremity, and from the shores contiguous to that part. In about lat. 4° 10′ N., and 8 or 9 leagues westward of Karkalang, there is said to be some rocks, seen in 1788 by the Iphigenia.

NORTHUMBERLAND SHOAL, to the south-eastward of the island Kabruang, is in the track of ships which approach the south end of this island, after having rounded the north end of Sangir. The Northumberland, Captain Rees, with the fleet bound to China, saw this shoal, January 31st, 1796, at 4 P.M.; the breakers bearing then from S. 70° E. to S. 87° E., distant 4 or 5 miles, and the south point of Kabruang N. 27° E. about 7 or 8 miles. On the middle of the breakers, a small patch of sand appeared above water, and the extent of the shoal is about 2 miles N. N.W. and S. S. E., bearing from the south point of Kabruang S. 14° E., distant 10 or 11 miles. The journal of the Warren Hastings, in company, states the shoal to be only 2 or 3 leagues distant from the south point of Kabruang; but Captain Greig says it is about 12 miles' distance, in a S. E. direction from the peak. He rounded the south end of Kabruang at the distance of half a mile; and the Glatton passed betwixt the island and the shoal in the night, without knowing of its existence! Northumberland Shoal.

THE MEANGIS, or MENANGUS, a group of islands, in about lat. 5° N., lon. 127° 45′ E., distant 12 or 14 leagues to the north-eastward of the Tulour Islands, consists of three considerable islands of moderate height, with some smaller ones adjoining, being the easternmost of those that lie to the southward of Mindanao. There are said to be soundings amongst the largest islands in the narrow channels by which they are separated, but they are little known to English navigators. As, by the account of Captain Hunter, there is a small isle to the northward, and others betwixt this group and the Tulour Islands, besides another high island in lat. 5° 33′ N., said to be distant about 12 leagues to the eastward of the latter, a good look-out is indispensable in these parts, for the number and positions of the islands are not correctly known. At 6 P.M., June 22nd, 1813, the Volunteer passed the Meangis Islands, bearing S. by E. about 6 leagues, at the same time a high rock or isle like a haycock bore N. by W., but no other islands were seen in steering to the eastward. The Meangis are said to produce cloves. Meangis Islands.

Mindanao South Point.

Tides.

THE SOUTH POINT OF MINDANAO is in lat. 5° 39′ N.; the land fronting it, being high and hilly, may be seen about 12 leagues; and the channel between it and those islands is 3 or 4 leagues wide, clear of hidden danger.* The tide flows here till 7 hours on full and change of moon, and rises 6 feet.

Cape St. Augustine.

CAPE ST. AUGUSTINE, the S. E. extremity of Mindanao, appears to be in about lat. 6° 4′ N., lon. 126° 48′ E., and from thence northward, the east coast of that island is little frequented. There are some bays and harbours on this part of the coast, one of which is about 16 leagues from the cape, with anchorage in it, but the inhabitants are said to be inhospitable to strangers.

Bays on the south coast of Mindanao.

Town.

Caution.

On the south coast, between Cape St. Augustine and Serangani Point, is the large bay of Tagloc; and at the bottom of the great bay on the S.W. side, betwixt the south point and the strait of Baseelan, lies Illana or Bongo Bay, where, on the east side, the river and town of Mindanao are situated, in about lat. 7° 10′ N., lon. 124° 35′ E. The anchorage is about 1 or 2 miles off the river, in 10 to 15 fathoms, sand, to the S. E. of Bunwoot or Bongo Island; and the town of Mindanao is about 2 miles up the river, which is narrow, with 10 or 11 feet on the bar, at high water spring tides. Pollock Cove, about 3 leagues farther to the northward, is a good harbour, where fresh water may be procured; but the inhabitants here, and those of the adjacent coast, seem to be independent of the Rajah of Mindanao, and, being a treacherous race, must be carefully watched. Boats' crews landing at any of these places should be well armed, and the people kept together, and constantly on their guard.†

The depths in the entrance and middle of Pollock Cove are from 45 to 30 fathoms, decreasing to 20 and 15 fathoms near the southern shore, to the eastward of the reef that surrounds the point. On the west side of Bongo Bay several rivers fall into the sea.

Supplies.

There are other small bays or harbours on the south coast of Mindanao, one of which, called Kamaladan, is situated to the westward of the west point of Bongo Bay, near to the N. E. end of Pulo Lutangan, a considerable island contiguous to the coast. Sugud-Boyan Bay, to the north-westward of the Serangani Islands, stretches a great way inland, having anchorage of 15 or 20 fathoms on the S.W. side, with some streams of water descending from the hills on the east side; and there are plains of long grass on the west side this bay, abounding with deer. To the eastward there is a very high conical mountain, in about lat. 6° N., discernible from a great distance at sea. The inhabitants of this coast, and those of the principal islands of the Sangir Chain, subsist chiefly upon sago, fish, and fruits; but rice, sugar-cane, and pepper, are cultivated in some places in small quantities. A ship in want of provisions will seldom be able to

* H. M. S. Sybille and Fox, from Samboangan and Bongo Bay, bound to Macao, beat through the channel between Mindanao and the Serangani Islands, during the day and night of the 13th of February, 1798, and got no soundings, although they stood pretty close to the shore on both sides of the channel. Captain Waterman, in the ship Volunteer, touched at the Serangani Islands, June 19, 1813, and found a lagoon of rain water on the westernmost island, where they filled up, but it was rather brackish; a small well of good water was found on the eastern island, where they filled two casks, and procured plenty of fire-wood. The Volunteer *appears* to have passed between the islands, as Captain Waterman recommends to avoid the west side in going through, because that shore is lined by a shoal in the narrowest part, projecting out nearly to mid-channel; but the eastern side of the passage is safe.

† In February, 1798, H. M. ships Fox and Sybille touched at Pollock Cove for water, where it is procured with greater facility than from Mindanao River. The inhabitants pretended friendship and assistance, but finding the Sybille's boat's crew unarmed, they attacked and killed three of them; the rest, after being in captivity about a year, were ransomed by the humanity of Captain Lynch, who touched at Mindanao in a trading voyage to the eastward, and were carried by him to Amboina.

procure a sufficient supply: poultry, hogs, and goats, may be got at some of the islands, but it is thought that bullocks and rice are only to be had in sufficient quantity at Sooloo.

A ship from Baseelan Strait, bound into the Pacific Ocean, may steer a direct course for the Serangani Islands, if the wind be favourable, and pass betwixt them and Mindanao, or to the southward of them, as circumstances require. From hence she may steer out between the Meangis and Tulour Islands, to be able to clear the north cape of Morty with north-easterly winds; but if any difficulty appear in pursuing this route, she may pass betwixt the Tulour Islands and Sangir, and then haul to the eastward. Directions for sailing eastward.

Ships from the Strait of Macassar, having passed through the channel betwixt Siao and Tagolanda, or through any of those contiguous to Sangir, should steer to the eastward, to give a berth to the north end of Morty; and to effect this purpose, those ships which have passed through any of the channels to the southward of Siao ought to haul to north-eastward, if the winds admit. If N. E. winds prevail, with a current setting to the southward, it will be found difficult to prevent getting sight of the north part of Gillolo and Morty, or even, perhaps, of the two islands Meyo and Tyfore, situated in the north entrance of the Molucca Passage: but here, the southerly current generally abates, and a northerly one is often experienced, setting out along the west coast of Gillolo. It is, however, prudent to give a good berth to the northern extremities of that island and Morty, when it can be done without much loss of time, for the current sometimes sets to the southward in the vicinity of those islands;* and there is a swell generally from north-eastward.

MORTY, or MORTAY ISLAND (the north cape), in lat. 2° 44′ N., lon. 128° 25′ E., measured by chronometers from Siao, slopes down from the high table land into a point that forms the cape. This island extends 12 or 13 leagues to the southward, the land mostly high, of an even appearance; and the north coast about the cape is lined by a reef, projecting 1 or 2 miles out, having no soundings close to, with some small isles adjoining. Riow Island is situated at a small distance from the west coast, betwixt which and the north end of Gillolo is formed the north entrance of the Morty Strait. In 1808, there was little or no variation among the islands betwixt Mindanao and Celebes. In the bay betwixt the N. E. part of Riow and Morty there is *said* to be anchorage, with fresh water, plenty of wild hogs, deer, wood-pigeons, &c., on the islands contiguous. Morty North Cape.

GILLOLO is high bold land, with three high remarkable peaks, discernible when off the N.W. part of the island: the north end is in about lat. 2° 23′ N., having several isles fronting it on the west side, called the Talenading Islands, which are of moderate height. Gillolo.

MEYO, in lat. 1° 12′ N., lon. 126° 39′ E.,† by chronometer, measured from Siao, is a high island, of even appearance, lying in the north entrance of the Molucca Passage, between Gillolo and the north-eastern extremity of Celebes; and the Island of Meyo and Tyfore.

* The Panther was carried into Morty Strait by the current during light winds, then passed through betwixt that island and Gillolo to the southward, and got no soundings whilst drifting through the strait; but the current generally sets through the Molucca Passage to north-eastward during the greatest part of the year.

† Captain C. R. Drinkwater Bethune, of H. M. S. Conway, makes this island in lat. 1° 18′ N., lon. 126° 32′ E.

Tyfore is in lat. 0° 58′ N., lon. 126° 27′ E., distant about 6 leagues south-west of Meyo.

Directions for the passage into the Pacific Ocean.

Ships having rounded the north cape of Morty, ought not to exceed lat. 4° N., until they have made sufficient easting with the westerly or variable winds, to be expected in low latitudes; for in lat. 4° to 6° N., the verge of the North-east Monsoon will be approached, where it may be tedious getting to the eastward: in this track, care must be taken to avoid the low islands, or dangers, described in one of the following sections. Early in this season it is advisable, more particularly in an indifferently sailing ship, to make easting sufficient to pass outside the Pellew Islands, or at least to make the southernmost island, then proceed along the west side of them; for strong N. E. winds, with a westerly current, generally prevailing in the track between these islands and the north end of Luzon, in November, December, and January, would render it unpleasant to fall to leeward near the coast. It is, therefore, prudent, to keep well to the eastward in this season, until certain of being able to weather the north end of Luzon, and the Babuyanes Islands; which having approached, any of the channels adjoining those islands may be chosen, as circumstances require. Late in February, or in March, it is not necessary to make so much easting, for in these months you may pass to the westward of the Pellew Islands with safety; because the N. E. winds are not so violent, nor the westerly currents so strong.

DIRECTIONS FOR SAILING FROM MACASSAR STRAIT, TO THE WESTWARD OF THE PHILIPPINE ISLANDS.

CHANNELS, DANGERS, AND HEADLANDS.

Passage from Macassar to the westward of the Philippine Islands.

SHIPS bound to CHINA may be considered too late for the Pitt Passage, if they do not reach Pulo Laut before the 1st March; in such case they ought to proceed through the Strait of Macassar and along the west sides of the Philippine Islands, because the season is then too far advanced for the route by the Pacific Ocean.

Being off Cape Donda in March or April, a course should be steered for the east end of Baseelan, observing to keep well to the westward when the winds permit, to prevent being carried among the islands to the S.W. of Sooloo; for in this season westerly currents and light easterly winds greatly prevail betwixt Cape Donda and Baseelan. In case of falling to leeward, there are safe channels among the islands to the eastward of Sooloo; but as they are little frequented, it may be advisable to send a boat ahead to sound when passing through any of them.

If a ship can only fetch Sooloo she may pass round the west end of that island to the road, then steer from the north side of it about N. N. E. towards the Sangboy Islands, giving a berth to Takoot Paboonoowan Shoal, which has been described under the article Sooloo in one of the preceding sections. In proceeding by this route westward of the Sangboys, continue a boat ahead sounding, for the dangers bounding it on each side are not well known.

Griffin Rocks.

THE GRIFFIN ROCKS, where the ship of this name was wrecked, lying N. by E. about 2 leagues from the small island Salleeolakit, and $2\frac{1}{2}$ or 3 leagues westward of the Sangboys, must have a berth to the eastward, for the sea does not always break on them. To the south-eastward of Salleeolakit, about 2 leagues distant, there is another rock, called Bato Balow. The breakers seen by the fleet June 26th, 1795, were probably on this rock, or on some neighbouring danger; there being several shoals near the small islands westward of the Peelas and Sangboys. This fleet, bound from China to England, came through the Mindora Sea, passed to the westward of the Sangboys, Peelas, and adjacent islands, and watered at Toolyan Bay, on the N. E. side of Sooloo. When passing the breakers at 5 miles' distance in the Woodford, they were on with the south extreme of Baseelan bearing E. $\frac{1}{4}$ N.; when on with the north extreme of Baseelan, they bore N. E. by E. $\frac{3}{4}$ E., and were on with the north extreme of Peelas, bearing N. E. by N., a small isle then bearing N. by E. $\frac{1}{2}$ E., probably Salleeolakit.

Besides these dangers on the east side the channel, there are several coral shoals on the edge of soundings to the westward, not well known, making it prudent not to borrow on that side above 7 leagues to the W. S. W. of the Sangboys; nor ought these islands to be approached under 4 or 5 leagues until they bear about East, when a ship will be clear to the northward of the Griffin Rocks.

If the wind be to the north-westward after a ship is round the west end of Sooloo, she may steer to the E. N. E. and N. E., and proceed through the Peelas Channel, which route seems preferable to that last described.

Baseelan Island.

BASEELAN ISLAND, which is high and extensive, is separated from the S.W. end of Mindanao by the STRAIT OF BASEELAN, which is a good channel; the eastern extremity of the island is in lat. 6° 30′ N., lon. 122° 30′ E., by mean of a series of lunar observations. If the winds are favourable for approaching it, push through the strait betwixt Baseelan and Mindanao, which is the shortest passage.*

Sailing Directions.

In the entrance of this strait lie three islands, the southernmost of which, called Manalipa or Coco Island, is low, and distant about 5 miles off the Baseelan shore. The other, called Sibago, bearing about N.W. by W. from the former, is high, with low land projecting from the hill; and near it to the eastward lies the third island, with low land projecting from its high hill. These two islands, being near each other, appear as one Saddle Island when viewed in some bearings.†

If a ship happen to be in the morning near the small low island Tabtaboon, lying to the eastward of Samboangan, she will sometimes get a land breeze off the Mindanao shore, which may probably carry her through the strait before night, if the tide be favourable; but the winds are often light and variable at North and westward. The coast of Mindanao may be approached pretty close, the bank that lines it being steep to, and projects only to a small distance: there is no danger in the eastern part of the strait, and there are soundings along the Baseelan side, of various depths, from 10 to

* Ships are liable to experience strong currents at times near Baseelan. In March, we had in the Anna a very strong easterly current two days, then it suddenly changed and set to the westward, by which we were drifted to the southward of the island, and obliged to pass round it on that side. Departing from Baseelan in July for Macassar Strait, we were set 73 miles to the eastward, and 30 miles to the northward in two days by the current, which then changed suddenly, and set to the westward about 30 miles daily, until we reached Cape Rivers. There are irregular tides in Baseelan Strait, sometimes weak and other times strong.

† Captain C. R. Drinkwater Bethune, R. N., makes the east end of Baseelan in lat. 6° 41′ N., and lon. 122° 17′ E.; Coco Island in lat. 6° 45′ N., lon. 122° 15 E.; and the Eastern Sibago Islet in lat. 4° 46′ N., lon. 122° 19 E.

35 fathoms, where a ship may anchor occasionally, if she pass betwixt the Islands Manalipa and Baseelan. There is a large bay a little within the N. E. point of Baseelan, where the depths decrease from 20 to 11 and 10 fathoms, coarse sand and rotten coral, towards the Baseelan shore, favourable for anchoring to stop tide; and in some places the bottom is fine sand to the northward of the islands. On the south-east side of Baseelan there appear to be no soundings unless very near the shore; within 1½ cables' length of the *long low island* that fronts it, nearly mid-way betwixt the eastern part of Baseelan and the Island Boobooan, our boat could get no bottom with 60 fathoms line; and about a ship's length from it she got 18 fathoms rocky bottom.

The Laurel, after rounding the east point of Baseelan, steered into the strait, along that shore to north-westward, in soundings of 35 to 25 fathoms, and had from 30 to 14 fathoms in working through betwixt Manalipa and Baseelan, where she anchored part of the night.

Samboangan.

SAMBOANGAN, in lat. 6° 43′ N., lon. 122° 14′ E., by lunar observations and chronometers (122° 3′ E. by Captain Bethune), is a small Spanish settlement on the Mindanao shore, north side of the strait, where water and refreshments may be procured. When at anchor in the road, Baseelan bore from S. 44° E. to S. 47° W., Manalipa and Sibago nearly in one S. 63½° E., the high spire of Samboangan E. 4½° N., distant half a mile. This place is protected by a fort regularly built, and well mounted with ordnance. There is little or no variation here at present. Captain Drinkwater Bethune, of H.M.S. Conway, while waiting for one of his boats which had been sent into Samboangan, tacked off the island of Santa Cruz in 9 fathoms: extremes N. ½ E. and E. ½ N. The ship was afterwards set by the tide to the eastward within 2 or 3 miles of Manalipa, and got 9, 7, and 5 fathoms, uneven sounding.

Anchorage.

Santa Cruz Islands, and contiguous shoals.

THE SANTA CRUZ ISLANDS, two in number, are small, situated 4 or 5 miles south-westward of Samboangan. By keeping along the Mindanao shore there is a safe passage; but there is said to be great overfalls, with a bank of 4 fathoms, coral rock, northward of these islands. A bank of coral rock projects also from Santa Cruz Islands south-westward, on which H. M. S. Sybille grounded in January, 1798. Ships adopting the large channel betwixt these islands and Baseelan must give a berth in passing, by not borrowing too close to the islands. To the westward of Santa Cruz Islands, the strait is clear from side to side, with soundings of 20 fathoms about 2 miles from the Mindanao shore, deepening to 40 fathoms, no ground, in the offing.

Caldera.

A little inside the S. W. point of Mindanao, which bounds the west entrance of the strait, there is a place called Dumalan, with the small settlement of Caldera, where fresh water may be procured. Although the soundings found in Baseelan Strait are very irregular, with rocky bottom in many places, there are no known dangers, excepting those adjoining the Santa Cruz Islands, mentioned above.

Channels southward of Baseelan.

THE CHANNELS SOUTH OF BASEELAN appear to be safe, some of which may be chosen, when the winds or currents are unfavourable for proceeding northward through Baseelan Strait. There are safe passages betwixt some of the islands to the westward of Belawn, but they are not frequented; a ship proceeding through any of them must take care of Takoot Saanga, a coral shoal, distant about 5 miles E. S. Eastward from Duo Bolod.

The channel betwixt the southern coast of Baseelan and the islands in the offing is

very safe, and the least water said to be 9 or 10 fathoms; but it is not so wide as the Tapeantana Channel, which is the next to the southward, and better known.

Approaching the islands eastward of Sooloo, care is requisite in the night, on account of a High Pyramidal Rock, lying about 8 or 10 leagues to the south-eastward of the east end of Sooloo, and about 40 miles East of Sooloo town by chronometers. High Rock.

TAPEANTANA CHANNEL, bounded on the north side by the island of this name and Lanawan, and by the islands Belawn and Tattaran to the southward, is $2\frac{1}{2}$ leagues wide in the narrowest part, between Lanawan and Tattaran; but nearly 5 leagues wide at the entrance, betwixt the eastern part of Belawn and Tapeantana. Tapeantana Channel.

TAPEANTANA ISLAND has a regular peaked high mount on the western part, with low land stretching out to the eastward; the S. E. point is in lat. 6° $14\frac{1}{2}$′ N., lon. 122° 8′ E.,* by lunar observations, taken by Captain Heywood and myself, corresponding within 2 miles of each other. Boobooan Island, a little to the northward of Tapeantana, is very like it, having a mount of similar shape. Close to the eastward of these there are some low isles, the largest of which lies off the east side of Boobooan; and a reef projects from the north part of Tapeantana towards these low isles. Tapeantana, and other islands.

BELAWN,† the outermost island on the south side of the channel, is the largest of these islands; having a high round mount on its western part, with a long space of low level land, extending several miles to the eastward. The east point of this island is in lat. 6° 0′ N., bearing nearly South from the east point of Tapeantana. Near the north part of Belawn, to the eastward of Tattaran, there are two small islets, called Dipoolool; and about 2 miles off the N.W. end of Tattaran lies a rock above water. Belawn, and adjacent islets.

TATTARAN and LANAWAN are two small islands of middling height; and until the west end of the latter bear North, there are no soundings in coming from eastward into the channel. When the current or ebb tide is running eastward, a ridge or line of strong ripplings appears sometimes like breakers, occasioned by the stream falling off the edge of the bank into deep water. When soundings are got on the steep edge of the bank, the water shoals immediately to 10 or 9 fathoms, soft bottom; and we found no less in the channel. In the south side of the channel towards Tattaran, the water is much deeper; but the bottom there is not so even nor so soft as in the northern side near Lanawan, which island is about 3 miles to the westward of Tapeantana. Tattaran and Lanawan. Soundings.

TAMOOK ISLAND, in lat. 6° 28′ N., lon. 121° 56′ E., by lunar observations and chronometers, distant 4 or 5 leagues N. Westward from Lanawan, is rather low; the fair channel is between it and Duo Bolod, two remarkable hummocks about 4 leagues westward from Tattaran. Tamook. Duo Bolod.

When a few miles westward of Lanawan the depths increase, and from thence to the south point of Mataha are irregular, from 25 to 40 fathoms; but from 30 to 35 fathoms are the common soundings in the fair track. The bottom is fit for anchorage, con- Anchorage in the channel.

* The chronometers made it a little more to the westward by measurement from Cape Donda.

† The fishermen wished to carry the Anna to the island, where they said we could anchor off a large village, and be supplied with good water and refreshments: but some of the principal men of the place, who came on board, seemed to have sinister intentions.

sisting of sand and gravel, mixed with coral in some places: near the south side of Tamook there are coral overfalls, and the depths less than at 4 or 5 miles' distance.

Tides. The tides in the channel southward of Tamook set nearly N.W. and S. E.; the ebb to the S. Eastward, strongest in the South-west Monsoon, about $2\frac{1}{2}$ and 2 miles per hour on the springs. This seems also to be the case in the opposite season, for in March we had the tide setting from 1 to 2 miles per hour to S. Eastward, and only a short slack when the flood ought to have been running N. Westward. Having calms and faint variable airs at this time, we were obliged frequently to remain at anchor, and were eight days from entering the Tapeantana Channel until we cleared the islands to the N.W. of Baseelan.

Metaha. MATAHA (the south point), in lat. 6° 32′ N., lon. 121° 50′ E., by chronometers, distant about 2 leagues N.W. by W. from Tamook, forms the eastern limit of the entrance of Peelas Channel, which is bounded by Peelas Island on the west side. Mataha and the other islands betwixt it and Baseelan are low and woody.

Peelas. PEELAS is the largest of the islands adjacent to Baseelan, being about 2 leagues in length North and South, all low level land, excepting on the north part are two hills: contiguous to its eastern shore there is a small isle, called Tagowloo.

Ballook Ballook and Peelas Channel. BALLOOK BALLOOK, in lon. 121° 50′ E., bearing North from Mataha, is a considerable island, with a sloping hill at the north part, with low land to the southward; with Mataha it forms the east side of Peelas Channel, which is 4 or 5 miles wide, and very safe. This channel extends North and South, the tides in it appear regular and pretty strong during the springs: the soundings are irregular from 25 to 35 or 40 fathoms, and off the south end of Mataha there are 16 or 18 fathoms. About mid-way between Mataha and Ballook Ballook there is said to be a rock or danger, in a direct line joining them.

To sail through it; or by the Inner Channel. Having passed Tamook, keep nearest to Mataha in entering Peelas Channel to avoid some shoal coral patches off the south end of the island Peelas, on one of which the Neptune's boat, in June, 1801, had only 4 fathoms. When through Peelas Channel, the fair track is directly northward, on the east sides the islands Sanboys and Teynga, which are safe to approach: and there is a passage with 8 and 10 fathoms water between them. With a working wind do not stand near the N.W. part of Baseelan to the eastward of Ballook Ballook, for the Mentor grounded on a shoal in this situation; to avoid which, ships that sail through the Inner Channel between the southern coast of Baseelan and the islands should steer from the west point of Baseelan N. Westward, and borrow towards the N. E. side of Ballook Ballook in passing.

Sangboys. SANGBOYS, in lat. 6° $48\frac{1}{2}$′ N.,* distant about $2\frac{1}{2}$ leagues northward of the north extreme of Peelas, are two high islands close to each other, called sometimes Hare's Ears. The hill on the South or Great Sandboy resembles a dome, from which low land projects.

Teynga. TEYNGA, in lat. 6° 52′ N., lon. 121° 43′ E., by chronometers, distant about 4 miles

* Observations in H.M.S. Belliqueux, in July, 1807, made these islands several miles farther North. Capt. Torin, of the Coutts, also made all the islands from Mataha to Teynga about 4 miles farther North than the latitude stated above.

N. Eastward of the North Sangboy, and on the meridian of the north end of Peelas, is small, very low, covered with trees, and it is the northernmost island of the Sooloo Archipelago; a reef projects from its southern part a little way, and from the northern part of the island a rocky shoal extends a great distance N. Eastward, on the extremity of which the soundings decrease regularly from 15 to 7 fathoms; and from hence soundings stretch across to the S. W. part of Mindanao and the Strait of Baseelan. All these islands abound with wood, but, according to the statement of the fishermen, excepting Belawn, they are destitute of good water in the dry season. Our boat could find no water on Tattaran nor on Tamook in March, but there is said to be some on the latter island during the rains in the S.W. Monsoon. These islands destitute of good water.

MALOZA RIVER, on the S.W. side of Baseelan, in the eastern side of Maloza Bay, bears about N. N. E. from Tamook. The S.E. point of the bay has a tope of tall trees on it, with two small islands opposite, one of which, called Gowenen, is high, but not distinguished from the offing, being close to the shore of Baseelan. A ship intending to water at Maloza may anchor near this island, the direct passage for boats going to the river being betwixt the S. E. point of the bay and the Island Gowenen. The mouth of the river is fronted by a shoal bar, over which a loaded long boat can only pass at high water; and we found here but one flood during twenty-four hours, high water with the moon on the meridian. The village of Maloza is about a mile up the river, the entrance of which being narrow, it is not discernible until close to it, and the trees from each side joining together, and forming a canopy over it, makes the aspect very gloomy within. Maloza River. Tide.

This river is not a good watering place for vessels not well armed; there are also many obstructions from trees which have fallen into the river, and it becomes so narrow a little way in, that there is not room to row the oars. If a ship is obliged to water here, two boats ought to be sent together, if possible, well armed; and when the water is observed to be fresh, they ought not to proceed higher, for it is not advisable to go up to the village of Maloza, on account of the perfidy of the natives.*

Having proceeded about 4 leagues North of the island Teynga, you will have no more soundings in passing along the west coast of Mindanao, which is all bold high land, steep to, and should be coasted within a convenient distance. The winds here in the North-east Monsoon are light and variable from northward; but when brisk, they prevail between N. E. and East. To sail northward along the coast of Mindanao.

In lat. 7° 25′ N., about 7 leagues northward of the S.W. part of Mindanao, called Alimpapan Point, the Revenge watered in a small bight; but the shore was so steep that she nearly tailed on the rocks, when in anchoring ground. Port Maria is said to lie 4 or 5 leagues farther northward, having 30 fathoms water in the entrance, decreasing to 8 or 10 fathoms inside, where fresh water may be got, and shelter from all Port Maria.

* In March, 1793, the Anna's long boat made three trips to this river for water, and twice went up to the village; the inhabitants seemed very friendly, and the fisherman we had as guide endeavoured to persuade us to land, assuring us that we would be well treated at the village, that there were only women and children in it, the men being out fishing. This *apparently* seemed to be the case, for few men were seen, but plenty of women came to the boat with fowls, &c., to barter with the crew for handkerchiefs, knives, and trinkets. I however discovered from one of the boat's crew, who had landed and understood the language, that there were more than 100 armed men concealed behind the bushes, and he overheard two persons appoint the time when an attack was to be made on the boat. But fortunately their design was frustrated, for, like true assassins, they had not courage to make the attack, because three Europeans in the boat kept arms constantly in their hands. The ship Gloucester, of Bombay, about three years after, had two boats cut off in attempting to water at this inhospitable place.

winds but those that blow at N.W. and westward, but it is little known to English navigators.

Balagonan Point.

BALAGONAN POINT, in lat. 7° 51′ N., lon. 122° 24′ E., by lunar observations, is a projecting headland, sloping down into the sea; and Gorda Point, in lat. 8° 1′ N., distant about 5 leagues N. Eastward from it, terminates in a small hummock. The coast of Mindanao trends from thence E. N. Eastward to Galera Point, which is the western extremity of Sindangan Bay.

Sailing directions.

The passage from Baseelan to the northward along the west side of the Philippine Islands may be performed at any time of the year in ships which sail well, by keeping near the west coasts of Mindanao, Negros Island, Panay, Mindora, and Luzon. In October and part of November, the winds are often to the south-westward and southward; and although they prevail from northward during the strength of the North-east Monsoon, from November to April, yet, under the west sides of the islands light variable winds are sometimes experienced; or land and sea breezes, when close in with the shore. In the opening betwixt Mindanao and Negros Island, and betwixt Panay and Mindora, brisk N.E. winds generally prevail, with a strong current setting through these guts to the westward; although there is *seldom* any current of consequence under the lee of the large islands. It is, therefore, prudent to take every precaution, in crossing those openings, not to fall to leeward; because it would be unpleasant to be drifted off to the Cagayanes Islands, where some dangers exist, and considerable delay might follow in regaining the windward shore.

Being abreast of Point Balagonan, with a steady S.W. or southerly wind, steer a direct course for Point Naso, keeping rather a little to the eastward; if the winds are unsettled, light, and variable, keep along the coast of Mindanao to Point Galera, or thereabout, prior to stretching off from that coast for Point Naso; and in crossing, endeavour to approach the west coast of Negros Island.

Negros Island.

NEGROS, or BUGLAS ISLAND, is high bold land on the west side, and seems safe to approach. From Point Siaton, the southern extremity of the island, in about lat. 9° 2′ N., the west coast stretches nearly N.W. by N. to Point Sojoton, in about lat. 9° 50′ N., then taking a N. Easterly direction, a wide opening is formed between it and the south part of Panay. To the northward of Point Siaton the coast forms a large bay, having a small low island in it, where there is anchorage in 13 fathoms ooze, in about lat. 9° 15′ N.

Cagayanes Islands.

THE CAGAYANES ISLANDS, lying about 18 leagues to the westward of Negros Island, and bounding the west side of the passage, are two low woody islands of considerable size, the largest to the westward, and the narrow space between them is filled with islets and rocks. They are surrounded by a reef, which projects a great way out from their northern extremity: detached from the easternmost island at 1 or 2 leagues' distance, there is another reef; and to the S. Westward lie the small islands Caluja and Cavilli, at a considerable distance from each other.

Cavilli Island is a high sand-bank, surmounted with a tuft of trees: breakers extend from its western side 5 or 6 miles, which require a wide berth, being steep to; and, even in a clear night, a ship might be amongst them before the island could be seen.

When the Cagayanes Islands bore W. by N. about 6 leagues distant, they were just visible from the deck; the body of them is in lat. 9° 34′ N., lon. 121° 23½′ E., by

mean of Captain Heywood's observations and my own, differing 4 miles from each other. There seems to be an opening in the reef, off the south point of the easternmost island, with soundings of 4 and 5 fathoms inside, forming a kind of harbour for small vessels.

PANAY ISLAND is the next large island to the northward of Negros; Point Naso, or Nasog, its south point, I made in lat. 10° 25′ N., lon. 122° 6′ E., by a series of lunar observations, and chronometers corresponding;* it is a high bold headland, and bears from Point Balagonan N. 7° W., distant about 52 leagues. Close to the point, there are the two low isles, Luegas and Urajarao, with soundings of 5 and 6 fathoms in the gut betwixt it and Luegas, and from 10 to 20 fathoms near the reef that fronts the N.W. side of this isle.† Panay Island.

Along the S. E. and East coasts of Panay there is a navigable strait, with moderate depths for anchorage among the numerous small isles; Mr. Dalrymple went through this strait with the schooner Cuddalore in 1761. In the west entrance of the strait, where it is formed betwixt the large island GUIMARAS and the coast of Panay, the depths are only 4 and 5 fathoms, but increase to 10 or 12 fathoms inside, at the Spanish settlement Yloylo. This place is about 10 leagues E. N. E. of Point Naso, and the strait here forms a safe harbour, where supplies may be obtained if a ship is in want. Yloylo.

The west coast of Panay is generally of moderate height near the sea, well peopled, and cultivated in many places with rice. Several villages, with churches, are discerned in sailing along, but no soundings are got unless close to the shore. A chain of mountains, very rugged in some parts, stretches inland from Point Naso to the northern extremity of the island.

Asloman Village, in lat. 10° 32′ N., situated in the bottom of a small deep bay, about $2\frac{1}{2}$ leagues northward of Point Naso, may *probably* afford refreshments, for it is a considerable place; but it is uncertain whether there be any safe anchorage. Asloman Village, and coast adjacent.

Coasting along from Point Naso to Antique Bay, we could get no soundings 3 or 4 miles off shore.

Antique Bay, about $5\frac{1}{2}$ leagues northward of Point Naso, is a convenient place to stop at for water and refreshments, there being a Spanish chief, with a few Europeans and some native troops, stationed at the village Antique, where there is a small river and fort. When a ship is running into the bay with a brisk wind, sail must be reduced in time; for the bank being steep, no soundings are got until abreast the fort about $2\frac{1}{2}$ or 2 miles' distance, and the depths quickly decrease from 30 to 25 fathoms, to 8 or 7 fathoms, sandy bottom, which is the proper anchorage. Antique Bay and Village.

The Laurel, from Bengal, bound to Macao, after passing through the Straits of Sunda, Macassar, and Baseelan, steered to the westward of these islands, and touched at Antique Bay April 12th, 1788, where a Portuguese ship and two Spanish snows were at anchor. When at anchor in the bay, in 7 fathoms, sand, the observed lat. 10° 42′ N., the fort bearing E. by N. $\frac{1}{2}$ N. $1\frac{1}{2}$ or 2 miles, and the extreme points S. $\frac{3}{4}$ W. and N.W. $\frac{1}{2}$ N., the north point of the bay distant about 3 miles. Anchorage.

By permission of the chief, she procured wood and water, some paddy, poultry, and a bullock; but no fruit or vegetables could be got at that time.

Point Potol, in about lat. 11° 48′ N., bearing North a little westerly from Point Naso, is the north-westernmost headland of the island Panay, and over it stands a Point Potol, and adjacent coast.

* Captain Heywood made it in lat. 10° 24′ N., lon. 122° 8′ E., by chronometers.

† Capt. C. R. Drinkwater Bethune, R. N., places Luegas in lat. 10° 29′ N., lon. 121° 55′ E.

Directions. high mountain, discernible at a great distance. From Antique Bay to Point Potol the coast may be approached in daylight, within 3 or 4 miles, there being no hidden danger. Near the shore, in about lat. 11° 32′ N., lie two small islands; another island bears S.W. 4 or 5 leagues distant from Point Potel, having a safe and wide channel betwixt it and Panay.

This track contiguous to the coast seems preferable to the channel in the offing, between the dry sand-bank and Cuyos Islands; for in the North-east Monsoon land and sea-breezes will sometimes be found in shore, when calms or baffling airs prevail outside.

Dry Sand-bank. DRY SAND-BANK, in lat. 11° 24½′ N., lon. 121° 54′ E.,* by our chronometer, in the Anna, situated in the channel westward of Panay, bearing from Point Naso N. by W., distant 20 leagues, is a little elevated from the water, and may be seen about 6 miles from the deck. It is distant 5 or 6 leagues from Panay, and is in one with a high peaked mountain bearing E. ½ N.; the channel between it and the islands to the westward is about 9 or 10 leagues wide.

Sombrero Rock. SOMBRERO ROCK, in lat. 10° 45′ N., distant about 9 leagues from Panay, is little larger than a long boat, and can only be discerned at about 3 leagues' distance from the poop of a large ship, generally appearing black. It bears from Point Naso N. 51° W., distant 12½ leagues; from the centre of Grand Cuyo E. 14° S., and from Paguayan, the easternmost of the Cuyo Islands, S. 46° E., distant 20 miles. Soundings appear to extend from the Cuyo Islands nearly to Sombrero Rock; when it bore S. 9° W., seen from the crosjack yard, the Coutts had 120 fathoms, green sand, at noon, the observed lat. 10° 55′ N. There is a WHITE ROCK, in lat. 10° 28′ N., distant about 7 leagues South from the S.W. point of Grand Cuyo, which is far to the westward of the common track. (White Rock.)

Cuyos Islands. THE CUYOS ISLANDS, named from Grand Cuyo, the largest of them, consist of an extensive range or archipelago, of mostly high rocky islands, fronting the west side of the channel opposite to Panay, the nearest of them being 12 or 14 leagues distant from that coast. Grand Cuyo, in about lat. 10′ 52° N., is one of the southernmost, and is well cultivated with rice in some parts, but many of the other islands are barren and rocky. They extend from lat. 10° 40′ N. in a N. N.W. direction to Quiniluban, the northernmost island, in lat. 11° 28′ N., lon. 121° 11′ E., by chronometer;† this island bears from the Dry Sand-Bank about W. ½ N., distant 14 leagues, and is a high island, with others near it to the southward. The easternmost island of the archipelago appears to be in lat. 10° 58′ N., lon. 121° 27′ E., and lies about 4 leagues N.E. from Grand Cuyo, by the observation of Captain James Pearson, of the Lady of the Lake, who passed close to these islands in 1831. (Quiniluban.)

Soundings. There are soundings from 40 to 75 fathoms near these islands on the east side; also among and to the westward of them, there are safe channels, with various depths from 30 to 60 fathoms: nevertheless, a large ship ought not to pass between any of them, if it can be avoided, for reefs extend a great way from some of these islands, and there are several shoal patches of coral not well known.

Caravaos. CARAVAOS, or BUFFALOS, in about lat. 11° 53′ N., bearing from Quiniluban about N. E. by E., distant 14 or 15 leagues, are two islands bounding the channel on

* By Capt. C. R. Drinkwater Bethune, R. N., in lon. 121° 34′ E.

† Capt. Bethune makes Quiniluban in lat. 11° 29′ N., lon. 120° 47′ E.

the east side, and lying in a W. N.W. direction from Point Potol: they ought to be approached with caution in the night, for the outermost is very low. To the north-westward of these lie the SIMIRARA ISLANDS, having a long sand projecting far out from them, with two islets on its centre, covered with trees. When passing this sand at 3 miles' distance, with it bearing from E. S. E. to N.N.W., a rock off the northern-most Simirara Island then bore N.E. ½ E., and the easternmost of the Buffalos E. by S. Simirara Islands.

FALMOUTH BANK, lying betwixt Quiniluban and Mindora, is of considerable extent North and South, with various depths on it from 60 to 20 fathoms, and the least water found on it was 11 or 12 fathoms, coral rock. Upon the north part of it the fleet had soundings, May 30th, 1801, with the island Ambolon bearing N. 3° E., and Simirara from N. 60° E. to N. 63° E.; the Coutts had then 68 fathoms, next cast 14 fathoms, with Simirara N. 63° E., southern part of Calamianes W. 5° S., Quiniluban S. 20° W., and carried soundings of 12½ to 15 fathoms for a considerable distance, steering S. S. E. Falmouth Bank.

There are other coral banks in this neighbourhood, detached from the Falmouth Bank, on one of which we had several casts in the night of 22 to 25 fathoms, then no ground at 80 fathoms. By the bearings at daylight, this bank appeared to bear from Quiniluban N. ½ E., distant about 5 leagues, and E. ¼ S. from the south extreme of the Calamianes. On another bank, about 6 or 6½ leagues to the N.W. of Quiniluban, and 4 or 5 leagues to the eastward of the Southern Calamianes, the Betsey had only 5 fathoms. Other banks.

MINDORA STRAIT is separated into two channels by the Apo Shoal; the western channel, formed betwixt this shoal and Calamianes, is 5 or 6 leagues wide, and is sometimes called Northumberland Strait; the other, formed betwixt the west coast of Mindora and the shoal, is 4 or 5 leagues wide.* Mindora Strait.

Ambolon, and East and West Ylin, with a contiguous islet, front the S.W. end of Mindora at a small distance, and are of moderate height; Ambolon being the westernmost of these three islands, and East Ylin projecting farthest to the southward. The south end of this island is in lat. 12° 9′ N., lon. 121° 15′ E., or 7° 43′ East of Macao, by chronometers, and bears from the Dry Sand-Bank off Panay N. 38° W., distant 20 or 21 leagues. Islands near the S.W. end of Mindora.

In steering across from Panay towards these islands in the night, be cautious when borrowing on the east, or windward side of the channel, in order to give a berth to the Buffalos and the sand that projects from the Simirara Islands. When within 6 leagues of Ambolon and Ylin, haul to the westward, and keep at 4 or 5 leagues' distance from them, until their southern extremity bears S. E. by E. ½ E.; being then clear to the northward of the coral banks that lie to the westward of these islands, haul in for the Mindora shore, if you intend to pass between it and Apo Shoal. To sail from Panay towards them.

Besides the shoal, said to project from these islands several miles S. Eastward, there is a coral bank, or a *chain* of banks, westward of them; for in working to the southward in June, 1792, returning from China in the Anna, we got suddenly into 13 and 9 fathoms, bright coral rocks, seen under the bottom, and immediately after tacking to the westward got no soundings. The observed lat. 12° 13′ N., when we tacked at noon in 9 fathoms, with the low point at the S.W. end of Mindora bearing N. E. by E. ¼ E., extremes of the islands near it from E. N. E. to E. by S. ¾ S., body of Ambolon E. ½ S., Coral banks.

* Captain Ross, in his survey of Apo Shoal, describes this channel as only about 4 leagues wide; but in passing through it in the Anna, it appeared to be not less than 5 or 6 leagues wide.

distant nearly 3 leagues, and the Calamianes from West to S. W. by W. ¼ S. After standing 4 miles westward, stood back, and tacked on the edge of the coral bank in 13 fathoms, with the southern extremity of the islands off the S.W. end of Mindora bearing E. by S. ¼ S., and the body of the southernmost island E. ¼ S., distant 3 or 3½ leagues. From thence stood 3 miles N.Westward, and saw the rocks under the bottom on a coral patch, with apparently 12 or 15 fathoms water on it; but before the lead could be hove we were off it, out of soundings; the Calamianes bore then from W. ¾ S. to S.W. ½ W., distant about 8 leagues; the islands off the S.W. end of Mindora from E. by N. to S. E. by E. ¾ E.; Ambolon, the nearest island, distant about 4 leagues.

As the Lord North and other ships seem to have passed within a few miles of the west side of Ambolon, without getting soundings, these coral banks are probably detached from the islands. It may, nevertheless, be prudent to keep about 4½ or 5 leagues from the west sides of the islands, in order to pass outside these steep coral banks, or bank; for the verge of soundings was conspicuous by the discoloured water, which appeared shoaler in upon the bank to the eastward than where we tacked in 9 and 13 fathoms; but no broken water could be perceived. From 10 to 12 fathoms, the bank shelves down to no ground 80 fathoms at the distance of half a cable to the westward.

Port Mangarin. Port Mangarin, formed between Point Buruncan, the southern extreme of Mindora, and the contiguous islands Ylin and Ambolon, is sheltered from all winds, with good depths of water; but at the entrance, betwixt the N.W point of Ylin and Mindora, there are some rocks, with 5 or 6 fathoms water between them.

Apo Shoal. THE APO SHOAL, lying between the west coast of Mindora and the Island of Busvagon, was examined by the Company's ships Discovery and Investigator, in 1816, and its true position determined by correct observations and good chronometers.

North and East points. The northern extremity of the shoal is in lat. 12° 45′ N., lon. 120′ 31′ E., or 11¼ miles eastward of Point Calavite on Mindora: from the northern extremity it extends S. E. by S. 7½ miles, where it forms a very narrow spit or east point, in lat. 12° 40¼′ N., lon. 120° 36′ E.; from the eastern point the southern extreme bears S. 35° W., distant 5½ miles, and between the two points there are several gaps in the shoal. Islands on the shoal. On the western side there are two islands: the western one is largest, being about half a mile in diameter, and is covered with trees; white beaches line its northern and eastern sides, and a surrounding reef projects about half a mile. This island does not appear to be connected with the Apo Shoal, but about 1½ miles E. N. E. of it lies the small island, formed of barren black rocks, which is situated on the south-westernmost part of the shoal.

Large island. The large island is in lat. 12° 39′ N., lon. 120° 28′ E., or 8¼ miles eastward of Point Calavite; from the centre of this island, the north point of the shoal bears N. 24° E., distant 7 miles; the eastern point bears from it E. 9° N., distant 8 miles; and the south point bears S. 56° E., distant 6¾ miles. The whole extent of the shoal is 10 miles from its north to its south point, and 9 miles from its east point to the western part of the large island. Black rocks. There are two high black rocks N. E. of the small island, which may be seen about 2 leagues off, and the islands in clear weather may be seen from an elevation of 20 feet, about 3½ leagues. At low water many small rocks are dry on the shoal, particularly along its north side.

Coral bank. A small round bank of coral rocks, on which the Discovery anchored, and found the least water 9 fathoms, lies 7 miles eastward of the eastern point of Apo Shoal. When at anchor on it, the large island on Apo Shoal, visible half-way up the lower rigging,

bore W. 6° S., and the northernmost one of two small islands off Pandan Point on Mindora bore N. 25½° E., distant 7 or 8 miles, by which it appears that in the late Spanish survey of the west coast of Mindora these islands are placed about 2 miles too much to the eastward of Point Calavite, which seems to make the channel between them and the eastern point of Apo Shoal only 4 leagues wide. Eastern Channel.

Ships intending to pass between the coast of Mindora and the shoal in the night should keep about 2 leagues off the small islands near Pandan Point, as the eastern point of Apo Shoal is narrow, and should the wind be westerly it would not readily be perceived, nor would there be breakers to make known the approach to danger.

Whilst examining Apo Shoal, the Discovery and Investigator were frequently near it without obtaining soundings, and the boats found it very steep to, in all parts. Land and sea breezes were experienced here in March, the latter from West and S.W., with the tide or current setting northward; land and sea breezes prevailed also to the westward of the Calamianes.

NORTHUMBERLAND STRAIT, or the western channel of Mindora Strait, appears preferable to the eastern channel, being 5 or 6 leagues wide, with the advantage of the large Apo Island to guide you when passing the shoal, and knowing that you may approach the island to the westward within a mile. Western channel.

The islands northward of Calamianes and Busvagon were also examined by the Discovery and Investigator, and their situations well determined.

North Rock, in lat. 12° 27′ N., lon. 120° 4¼′ E., or 15½ miles West of Calavite Point, is a high black rock, having three others at a short distance westward of it; this is the northernmost of these islets which lie on the west side the western channel, and it may be seen 4 or 5 leagues from the deck. Captain Ross made the North Rock as stated above. Passing in the Anna, in 1792, our observations made it in lat. 12° 26′ N., lon. 120° 6′ E., corresponding with the Castlereagh's chronometer, which made it 14° 39′ E. of Pulo Domar. North Rock.

The largest island on Apo Shoal bears from North Rock N. 62° E., distant 25 miles; near this rock to the northward there are 40 and 50 fathoms water, and the same depths between it and Busvagon, on a muddy bottom.

Turret Island, bearing from North Rock S. 50° E., distant 7¼ miles, is small and rocky, having several detached rocks about it, and a remarkable hummock on its S.W. point, somewhat similar to a turret. Turret Island.

From North Rock S. 63° E., distant 15 miles, lie two small islands covered with trees, which have sandy beaches, and about 1½ miles to the northward of them there is a *black rock* above water. These two islands bear from the western island on Apo Shoal S. 24° W., distant 19 miles, and are nearer to this shoal than any of the islands off Busvagon; there are 25 fathoms on a coral bottom about 4 miles to the northward, and the same depth about 4 miles eastward of these islands. Other islands. Black rock.

There is a group of islands extending from lat. 12° 8′ to 12° 17′ N., and bearing about S. by W. from Apo Island, the northern one of which appears to be the largest; they are the easternmost islands hereabout: overfalls of 25 to 9 fathoms were got about 2 miles north-eastward of the northern island, and the channels between the islands did not appear very clear. Soundings of 23 fathoms were found about 7 miles N. E. of this group of islands, and two casts of 24 fathoms on a bank about 9 miles westward of Apo Shoal, by which we may infer that there are several coral knowls about these straits, although probably not so shoal as to be dangerous to ships. Group of islands. Coral banks.

Calavite Island, or High Island, in lat. 12° 21′ N., lon. 119° 56½′ E., by Captain Calavite Island.

Ross, bearing from North Rock S. 51° W. 9¾ miles, is about 2 miles northward of the northern point of Busvagon; the channel between them does not appear free of danger, as some rocks were seen above water eastward of the island.

Sail Rock. North-west Rock. About a mile N.W. of Calavite Island are rocks above water, one of which, named SAIL ROCK, is very remarkable; and 1¾ miles N.W. of this lies a large black rock, or North-west Rock, in lat. 12° 23¼′ N., lon. 119° 54¾′ E. When passing between these had 38 fathoms, and about 2 miles N. N. E. of North-west Rock passed over a coral spot in 8 fathoms.

Pinnacle Rock. Pinnacle Rock, in lat. 12° 18½′ N., about 2 miles West of the north point of Busvagon, is a very sharp rock above water, having 25 fathoms water about 2 miles westward of it, and 12 fathoms about a mile off. In lat. 12° 9′ N., lon. 119° 51¼′ E., lies the HAYCOCK, a high rocky island, about 2 miles off the west part of Busvagon, which may be seen 6 or 7 leagues; about 2½ miles west of it soundings of 26 fathoms were found, with overfalls, 19 fathoms about 6 miles off, and 30 fathoms about 11 miles off.

Haycock.

Green Island. Green Island, in lat. 12° 3′ N., lon. 119° 49′ E., is of moderate height; it may be seen about 5 leagues off, and is covered with trees; it is the westernmost island hereabout, surrounded by a coral reef, extending about one-third of a mile. To the eastward of Green Island there is a large bay or passage, with numerous small islands in it, and about 3 or 4 miles N.W. of the island, the Discovery got overfalls on a coral shoal, but did not find less than 5 fathoms; to the eastward of the island 23 fathoms were found, and 9 and 10 fathoms close to the reef.

In lat. 11° 56¼′ N., lon. 119° 51½′ E., there is a high point of land, apparently the western extremity of the Calamianes, near which lies a rock above water, and a short distance to south-west are other rocks above water. From this point the land curves in to the eastward, and extends to another high point, in about lon. 119° 56′ E., forming several points; and southward of the southern extreme there is apparently a wide strait or channel leading eastward.

Calamianes. THE CALAMIANES are a group of high islands, lying between the north end of Palawan and Mindora, the northernmost of which have been described above. Busvagon is the largest of them, distant about 14 or 15 leagues from Mindora, and with the small isles that line its eastern shore, bounds Northumberland Strait on the west side. If passing through this strait with a westerly wind, borrow towards Busvagon and the isles on that side, which are safe to approach; or with an easterly wind, the large Apo Island, which bounds the east side of the strait, may be approached occasionally to 1½ miles. On the east side of Busvagon there are soundings among some of the small isles, and anchorage in one part, near the shore of the former. Coron, lying to the southward of Busvagon, is also a considerable island, with small isles near it on the east side, and forms the southern limit of Calamianes, in lat. 11° 46′ N. Near the S. E. part of Coron lies Delian Island, with a round rock close to its south point; to the eastward of which, H. M. S. Belliqueux, in July, 1817, got 5½ fathoms on a coral bank about 3½ leagues East of Delian, and 12 fathoms, coral, on another bank, about 5 leagues S. S. E. of the same island; with generally soundings from 40 to 55 fathoms near them, and the same depths northward to Diviran Island, and 44 and 45 fathoms towards Gap Island, which lies near the east side of Coron, bearing about North from Delian, and to the south-westward from Diviran.

West coast of Mindora. THE WEST COAST OF MINDORA has no soundings excepting in the bays, or within 1 or 2 miles of the shore in some places. Inland, double and treble chains

of mountains extend through the island, and some low points of land project from them into the sea.

From the low point Mangarin, opposite the north end of the island Ambolon, the coast is low and woody close to the sea, to the distance of 4 or 5 leagues north-westward; having a beach and some inlets like rivers in this space, with the village of Ililin. There is said to be a shoal stretching along the shore to the southward of Usuanga Bay, with two islets close to the coast, in about lat. 12° 35′ N.

Usuanga Bay, about 6 leagues northward of the island Ambolon, is about $1\frac{1}{2}$ miles wide, and nearly the same depth, with soundings of 30 fathoms in the entrance, decreasing inside to 8 or 9 fathoms, sandy bottom. A rocky reef, with soundings of 1 to 3 fathoms, projects from the north point of the bay above half a mile southward, which must be avoided if a ship stop here for water. It is prudent not to anchor under 10 or 12 fathoms, without first examining the ground, for near the rocky islets at the bottom of the bay there is shoal water and rocky bottom. Fresh water is found in a large pond at the S. E. side of the bay. Usuanga Bay.

Dongan, or Pandan Point, is a low projecting headland about 3 leagues farther to the northward, in about lat. 12° 48′ N., having two small islands off it, and a bay on the north side. From hence, there are soundings within 2 miles of the shore, as far as Santa Cruz Point, 5 leagues more to the northward, where a ship may occasionally anchor off the river and village of that name. The coast hereabout abounds with good pasturage, and in sailing along we saw herds of bullocks grazing. Point Dongan and adjacent coast.

To the N.W. of Santa Cruz Point lies Tulaba River and Bay, with soundings of 8 and 9 fathoms about a mile off shore, opposite a peaked hill. In lat. 13° 10′ N., a reef projects nearly 2 miles from the north point of Masi Bay, with from 2 to 6 fathoms on the north side of it in Mamburao Bay, the west point of which, in lat. 13° 14′ N., is also fronted by a reef, with the whole of the latter bay. Point Tibili is about 5 miles farther N.W., from whence, in a northerly direction, there are soundings near the shore into Palaon Bay.

Palaon, or Palasan Bay, about 2 leagues E. S. Eastward of Point Calavite, extends northward into the land about 3 or 4 miles, and is of circular form, having a reef projecting from the western point of the entrance. The soundings in it are from 30 to 15 fathoms, sand or mud, where a ship may anchor in 10 or 12 fathoms, and procure fresh water at a small village, where there is a river, with a red cliff near it, at the north-eastern part, in the bottom of the bay. Palaon Bay.

Point Calavite, in lat. 13° 27′ N., lon. 120° 20′ E., or 6° 48′ E. from Macao by chronometer, forms the N.W. extremity of Mindora, and bears N. 31° W. from the island Ambolon, distant 29 leagues. Betwixt the point and Palaon Bay there are soundings near the shore, which is bold to approach, for the few rocks interspersed along this part of the coast, adjacent to the point, lie close in, and one of them, just above water, has a sandy beach adjoining, upon the projecting part of the coast that forms Calavite Point. Over this point stands Calavite Mountain, which is of regular sloping form, and is visible at a great distance in clear weather. Point Calavite.

Having rounded the islands off the S.W. end of Mindora, as before directed, if to pass through the eastern channel, after hauling in for the Mindora coast, to avoid the southern extremity of Apo Shoal, you ought, with an easterly wind, to keep within 2 or 3 leagues of that coast, in proceeding along it to the northward. With a westerly wind, do not exceed the distance of 3 or $3\frac{1}{2}$ leagues from the coast, until clear to the northward of Apo Shoal; and in the night, it is prudent to borrow nearer to the coast than to the shoal. Variable winds, or land and sea breezes, may be expected here in To sail along the west coast of Mindora, and thence towards China.

March and April, and also along the coast of Luzon. Having rounded Point Calavite, and passed Luban and Goat Island, you may proceed along the coast of Luzon to Cape Bolina, conforming to the directions given in the description of that coast, and to those for proceeding to Canton River by the Palawan Passage, which will be found at page 294.

RETURN PASSAGE FROM CHINA, ON THE WEST SIDE OF THE PHILIPPINE ISLANDS.

Passage from China late in April or May.

ALTHOUGH SHIPS departing from CANTON RIVER, towards the end of April or in May, will be able sometimes to make a direct passage through the China Sea to Malacca Strait, in some years they may find difficulty in doing so. But it will answer no useful purpose for ships bound to the western side of Hindoostan, or to Europe, to pursue that route if adverse winds are found to prevail; because these winds will continue adverse in working out of the western part of the strait of Malacca, and will remain so after rounding Achen Head, in proceeding through a space of 12° or 14° of latitude, or until the limit of the South-east Trade is approached in lat. 7° or 8° S.

Neither ought ships to pursue the route to the southward for Gaspar Strait, or the Carimata Passage, in May or June; because S. E. winds then prevailing with north-westerly currents, render the passage through, between the islands, very tedious in these months, particularly in a ship that sails indifferently. It seems, therefore, proper for ships departing from Canton River, late in April or in May, to adopt the passage to the westward of the Philippine Islands, if bound to the western side of Hindoostan or to Europe; particularly when easterly winds are experienced at leaving the Grand Ladrone, which would retard them getting out into the Pacific Ocean, were they inclined to proceed by that route.

Passage towards Mindora Strait.

Departing from the Grand Ladrone, late in April or May, and intending to pursue the route by Mindora Straits, steer southward to the Macclesfield Bank, if the wind admit, particularly in May, to be enabled to reach the N.W. end of Mindora without tacking, should the wind veer round to south-westward.

If near the Macclesfield Bank with the wind at S.W. or S. S.W., steer to the S. E., by the wind; although unable to weather Point Calavite, variable winds may be expected near the coast of Luzon, to carry you round the N.W. end of Mindora; whereas, about 2° or 3° off the coast, light breezes prevail at South or S. S. E. in May, or early in June.

To sail to the southward through Mindora Strait.

If you adopt the Eastern Strait, or that formed between Mindora and Apo Shoal, keep within 3 or 3½ leagues of the coast in passing the latter, when the wind inclines from south-westward in the daytime; but the winds are frequently variable, inclining to *irregular* land and sea breezes, and you may borrow within a few miles of Mindora with a land wind. In steering southward along the coast, when the islands off the S.W. end of Mindora are first seen, they will appear separated from it by a wide opening, as the low land that forms the S.W. end of that island is not then discernible.

Keep about 5 leagues from the islands Ambolon and Ylin in passing, when their southern extremity bears between S. E. by E. ½ E. and E. N. E., to give a berth to coral shoals which lie to the westward of them.

Northumberland Strait, or that formed between Apo Shoal and the Calamianes, being wider than the Eastern Strait, should be chosen if the wind admit, and either side of it may be borrowed on, as circumstances require, the channel being about 6 leagues wide between the large island at the western edge of Apo Shoal and those of the Calamianes.

Passage along the coast of Panay.

When the south end of the Calamianes is brought to bear West about 5½ or 6 leagues distant, Quiniluban will be seen bearing S. by E. or S. S. E. 6 or 7 leagues, if the weather be clear: borrow towards this island with a westerly wind, to pass to the westward of the Dry Sand-Bank; then proceed, or work along the west coast of Panay at any discretional distance. Although irregular land and sea breezes are sometimes experienced close to the west coasts of Mindora and Panay in the South-west Monsoon, yet the prevailing winds are between South and West, with cloudy weather and frequent heavy showers of rain. The currents are seldom strong in this season, but they are liable to set to the eastward, in the opening between Negros Island and the north part of Mindanao.

Baseelan Strait.

Departing from Point Naso, in June or July, haul to the S. S. Westward in crossing over, to make the coast of Mindanao well to the southward, and to check any easterly current that may probably be running in between Mindanao and Negros Island; but, with an easterly wind, steer a direct course for Point Balagonan. Having reached the S.W. end of Mindanao, the route through Baseelan Strait ought to be chosen in preference to that through amongst the islands to the southward, for it is more direct than the latter.

From Baseelan through Macassar Strait, or Molucca Passage.

Having rounded the east end of Baseelan, if you intend to pass through either of the straits East of Java, into the Indian Ocean, you have the choice of proceeding by the Strait of Macassar, or by the Molucca Passage; the latter route is considered, by some navigators, more certain and expeditious, when the South-east Monsoon prevails to the southward of the equator. Indifferently sailing ships, which proceed through the Strait of Macassar, are seldom able to reach Allass Strait, without prolonging the passage by working round to the eastward of the Kalkoon Islands and Shoals; and if the South-east Monsoon blow strong, it may sometimes be found impracticable to work against it:* whereas, ships proceeding to the southrward by the Molucca Passage enter into the South-east Monsoon so far to the eastward that they have the choice of proceeding through any of the straits at discretion. But for ships intending to touch at Batavia, or to proceed through Sunda Strait, the route by the Strait of Macassar may be found most convenient.

If the Strait of Macassar be chosen, steer a course from Baseelan as the prevailing winds and currents require; for the former are often light and variable, although generally betwixt South and West, when they are a little steady. Nevertheless, easterly or south-easterly breezes continue sometimes for four or five days together.†

* The homeward-bound fleet left the Grand Ladrone about the middle of May, 1801, and proceeded to the westward of the Philippine Islands, through Macassar and Allass Straits. Although they kept along the Celebes side of the former strait, eastward of the Little Pater Nosters, they lost some days beating round the Kalkoon Islands, were eight days from being in sight of Little Pulo Laut to Bally Town, in Allass Strait; here they anchored July 15th, and found an American ship, which left China with them, had arrived two days before: this ship came by the outer track, through Dampier Strait and the Pitt Passage.

† H. M. S. Conway, Captain Drinkwater Bethune, in her passage from Canton to Batavia, went through the Selayer Strait, while the Apolline, an English barque which left Macao the same day, took the Macassar Strait,

The currents are also very mutable, sometimes setting strong to the eastward, along the south side of Mindanao, in June and July, and afterwards to the south-eastward, in the track from thence to Celebes; but they are liable to change and run to the westward. In June, the fleet had strong S. Easterly currents, in the track from Baseelan to Cape Donda; and early in July we had them setting mostly to westward, with S. Easterly and easterly winds.

With the wind steady at eastward, Cape Donda bearing about S. S. E. or South will be a good landfall. But the winds usually draw to westward, as the north entrance of Macassar Strait is approached, with a current frequently setting out of the strait eastward, rendering it prudent to keep to the westward if possible, and make Point Kanneeoongan; if you fall in with the coast of Celebes, far eastward of Cape Donda, much time may be lost beating into the strait against the westerly winds and north-easterly currents. The fleet which fell in with the coast of Celebes, far to the eastward of Cape Rivers, June 19th, 1801, did not get round Cape Donda until the 2nd of July; and the Fox, Lord North, and Hastings, were from May 26th to June 6th, 1781, near the north coast of Celebes, endeavouring to work into Macassar Strait without gaining any ground, and were obliged to bear away for the Molucca Passage.*

Having entered the Strait of Macassar, the route along the coast of Celebes may be pursued, if your ship sail indifferently, or if you intend to pass through the Strait of Allass, in order to pass well to the eastward of Pulo Laut, by being more to windward than by proceeding along the coast of Borneo, to the westward of Little Pater Nosters. But great caution is requisite in pursuing the eastern route, when crossing the latitude of the Laurel Shoal, and of those to the northward of the islands Noesa Seras, already described in the directions given for the Strait of Macassar.

If bound to Batavia, or through the Strait of Sunda, proceed to the southward as the winds admit, observing not to increase the lat. above 1° 50′ S., until the Borneo coast is approached within 4 or 5 leagues; not increasing the distance off the land in passing Little Pater Nosters, that the dangers in the offing fronting these islands may be avoided; the coast from Ragged to Shoal Points must be approached still nearer, on account of the shoals, which there bound the east side of the channel.

South-east winds generally blow strong into the south entrance of the strait, during the South-east Monsoon, producing a considerable swell, which is sometimes accompanied by a northerly current. This may excite apprehensions of difficulty being experienced in getting round Great Pulo Laut, more particularly as the Admiral Pocock found it impracticable to beat round in July, and was obliged to return to Sooloo for provisions. This ship *probably* had a very foul bottom, and sailed badly, for ships which sail even moderately well seldom experience much delay in working round Pulo Laut in the South-east Monsoon. In July, we had in the Anna a fresh monsoon at S. E. and S. S. E., with a heavy sea against us; notwithstanding, we soon worked round, for the current *apparently* set to the southward out of the strait, in opposition to the wind and sea. Nevertheless, the eastern side of the strait may be pursued in an

and reached Batavia two days before her. As it was ascertained that, when near Baseelan, the Conway was five days ahead of the Apolline, Captain Bethune infers, that if he had persisted in making westing, instead of getting so far to leeward, he would have shortened his passage a week at least; he left Macao on the 17th July, and reached Batavia the 29th August.

* They got into the Molucca Passage June 9th, and continued to beat against southerly winds and constant northerly currents until July 4th, but could not get to the southward betwixt Lissamatula and Oby Major. The Fox, being the best sailer, got through; but the Lord North and Hastings were obliged to go round Gillolo and Morty, and, after great loss of time, entered the Pitt Passage by Dampier Strait. They sailed from China April 1st, came through the Mindora Sea, and touched at Sooloo.

indifferently sailing ship, that she may be enabled to clear Pulo Laut with the S. E. wind, without the risk of prolonging her passage by having to work round.

From the south end of Great Pulo Laut, a steady and fresh easterly monsoon, with clear weather, will be experienced in steering to the westward between Java and Borneo.

THE MOLUCCA PASSAGE may be pursued, if the winds and currents are found, after leaving Baseelan, to be unfavourable for proceeding toward the Strait of Macassar. In such case, steer for the islands contiguous to the north-eastern extremity of Celebes, and after passing through the channel betwixt the islands Banca and Bejaren, and having rounded the N. E. end of Celebes, proceed to the southward between Lissamatula and Oby Major, which is the common passage; or otherwise, through Greyhound Straits. Molucca Passage.

Sometimes it is tedious getting through the Molucca Passage to the southward, because the current often runs through it to the northward; but the winds are light and variable at times, and the current is liable to change.

It appears, however, that a north-easterly current greatly prevails betwixt Celebes and Gillolo, particularly in the Southerly Monsoon, so that indifferently sailing ships may not be always able to beat through the Molucca Passage to the southward: this may be effected, however, if they keep close to the coast of Gillolo, and pass betwixt it and Batchian, through the Strait of Patientia; or through the Strait of Batchian, formed between the island of this name and the islands Tawally and Maregolang. Nevertheless, if a ship happen to be near the north end of Gillolo, or Morty, in the strength of the Southerly Monsoon, the route through the Gillolo Passage seems preferable to that by the Molucca Passage, for ships generally get speedily through the former into the Pitt Passage.*

It may be proper in this place to observe, that in all the old charts, English and Dutch, there is a *good passage*, with soundings of 20 and 17 fathoms, laid down betwixt the large islands of Xulla Mangola and Xulla Talyabo; but H. M. S. Greyhound could find no such passage. This ship was proceeding from Manado at the N. E. part of Celebes, towards the south end of Bouton, in order to intercept a ship about to sail from Amboina with spices for Batavia; and with a view to shorten the passage, she intended to proceed through the channel represented on the charts, betwixt the Xulla Islands, mentioned above. To their great surprise, no such channel could be found; but the wind favouring them, they passed round the west end of Xulla Talyabo, and got speedily to the south end of Bouton. A channel placed in the charts, which has no existence.

THE EASTERN COAST OF CELEBES, which forms the western side of the Molucca Passage, is very imperfectly known, being little frequented; it is fronted by islands, and many islands are scattered over the great bays of Tolo and Tominie, or Goonong Tella, by which this coast is deeply indented. In the latter bay, which stretches nearly to the west side of Celebes, there are soundings in some parts near the shore, and *probably* good harbours, formed by some of the islands. East coast of Celebes.

Goonong Tella River, on the north side the bay, in lat. 0° 28½′ N., lon. 123° 15′ E., has two small coves just within the entrance on the eastern side; into either of these Goonong Tella River.

* Returning from China by the Eastern Passage, it seems advisable in a ship that sails indifferently, to pursue the route to the eastward of Luzon, and enter the Pitt Passage by Dampier Strait; for some difficulty may be occasionally experienced in getting to the southward through Macassar Strait, or through the Molucca Passage.

a small ship may haul, and moor to the large stones that lie on the beach. Here she will be protected from the rapid stream, that descends from the mountains after much rain, and runs with great velocity into the sea.

The sea breeze sets in about 11 A.M., and abates about 4 or 5 hours after noon, when the land wind begins to blow from the mountains, frequently in strong gusts. A ship may bring up in from 30 to 56 fathoms, under the eastern point of the entrance, until the sea breeze set in; she can then proceed into either of the coves, or anchor in mid-channel, close to the fishing stakes in the entrance of the river.

The village is about 2 miles up the river, and the natives, who are chiefly Mahometans, carry on a considerable trade in wax and gold dust. The Dutch usually had two or three small forts on the banks of the river, for the protection of the place, which abounds with all kinds of refreshments; horses, buffaloes, bullocks, sheep, goats, and poultry, may be procured.

From Goonong Tella River to Current Island, situated close to the N. E. extremity of Elphinston Bay, the coast is high and bold, without danger. From the west side of this island some rocks stretch out 2 miles; and about 3 miles N. W. of it there are soundings of 50 to 25 fathoms, muddy bottom, about a mile off shore, where a ship might anchor if necessary: this place has been named Elphinston Bay. Outside Current Island the current generally runs northward, but to the westward of it, in Goonong Tella Bay, there is seldom much current.

From Current Island to Kema Road, the coast of Celebes may be approached to 3 miles, and in many places much nearer. The N. E. part of Celebes and the anchoring places adjacent have been mentioned in a preceding section, where directions are given for sailing from the Strait of Macassar into the Pacific Ocean.

Cape Talabo, or Talyabo, in about lat. 0° 48′ S., is a steep headland, forming the extreme of the peninsula that separates the bays of Tolo and Goonong Tella, and lies about 20 leagues N.W. of the west end of the large island Xulla Talyabo.

To sail from the Molucca Passage westward;

Having sailed through the Molucca Passage, between Lissamatula and Oby Major, you will be in a fair track of variable S. E. and East winds in the Pitt Passage, which will be favourable for running westward. From this position any route thought best for proceeding into the Indian Ocean may be pursued at discretion. If you intend to proceed by the Straits of Sunda, Lombock, Allass, or Sapy, the track round the south end of Bouton and through the Straits of Salayer will be proper; and thence a course must be steered for the intended strait. In crossing over for the Strait of Sapy, care must be taken to allow for a westerly current, which generally prevails in the Easterly Monsoon; and in case of falling to leeward, proceed through Allass Strait.

or through the Banda Sea and Ombay Passage.

If bound to Europe or to the western side of Hindoostan, a ship coming out of the Molucca Passage may adopt the route through the Ombay Passage, by borrowing towards Oby Major, that she may with greater facility pass on the east side of Bouro, betwixt it and Manipa. From hence she ought to steer southward close by the wind, which generally blows from E. S. E. in the Banda Sea during the South-east Monsoon; although in Pitt Passage it prevails at S. E., and in the Molucca Passage frequently at S. S. E.

Crossing from Manipa through the Banda Sea, with the wind at E. S. E., a ship that sails tolerably will generally be able to weather Ombay; and after passing between it and Wetter, she may proceed along the N.W. coast of Timor, and pass out into the ocean betwixt Semao and Savu.

This is the shortest route from Pitt Passage into the ocean, where the steady

S. E. trade wind may be expected; it is the quickest mode of clearing the islands, and in time of war probably less danger is to be apprehended from enemies' cruizers, than in any of the straits farther westward.

If a ship cannot weather Ombay, she may steer along its north coast and pass through the Strait of Alloo, or she may proceed on the same side the other islands to the westward, then pass out by the Strait of Flores, formed betwixt the east end of the island of this name and the adjacent islands Solor and Adenara. Should these straits be considered inconvenient on account of their small breadth and the rapid tides, she may continue to steer westward, keeping near the north coast of Flores to avoid several dangerous shoals in the offing, and then proceed through the Strait of Sapy into the Indian Ocean.

EASTERN ROUTES TO CHINA, BY PITT PASSAGE.

GENERAL REMARKS ON THE PASSAGE.

PITT PASSAGE was first pursued in the ship of this name by Captain Wilson, to whom it occurred that an eastern passage might be made to China during the season that the passage though the China Sea was considered impracticable, by making sufficient easting with the North-west Monsoon, then blowing to the southward of the equator, to enable him to reach China with the North-east Monsoon, prevailing in north latitude. He sailed from Madras September 23rd, 1758, and passed through among the Molucca Islands into the Pacific Ocean by Pitt Strait. But the space more particularly distinguished by the name of Pitt Passage is comprehended between the islands Bouton to the westward, and Battanta and Salwatty to the eastward; being bounded on the south side by Bouro, Ceram, Mysole, and their contiguous isles; and on the north side by Xulla Bessy, Oby Major, and the chain of small islands stretching thence to Pulo Popa and towards the entrance of Dampier Strait. Pitt Passage.

Pitt Passage is connected with the Pacific Ocean by three principal channels, the largest of which is the Gillolo Passage, formed betwixt the islands Gillolo and Waygeeooe; the next, Dampier Strait, formed betwixt the latter island and Battanta; the third, Pitt Strait, betwixt Battanta and Salwatty; and besides these, Revenge Strait, betwixt Salwatty and the coast of New Guinea, which is intricate and not frequented.

The route through Pitt Passage and into the Pacific Ocean by the Gillolo Passage, or by Dampier Strait, seems preferable to that through Macassar Strait, during the months of December, January, and February; for northerly winds and strong southerly currents, which greatly prevail in the latter strait during these months, will probably render the progress through it very slow; whereas, the North-west Monsoon blowing southward of the equator through Pitt Passage is favourable for getting speedily into the ocean.

OMBAY PASSAGE may be adopted by ships coming from Europe, it being much wider, and the winds generally more steady than in any of the straits westward. Ombay Passage.

A ship entering the Ombay Passage may pass on either side Sandalwood Island, but the south side is preferable, steering eastward between Timor and Ombay. Having rounded the east end of the latter, she ought to steer northward close by the wind, in order to weather Bouro; but if any difficulty appear in doing so, she may pass betwixt the east end of that island and Manipa into Pitt Passage; then proceed eastward as if she had come through the Strait of Salayer.

To sail by the Strait of Sunda towards Pitt Passage.

SHIPS from HINDOOSTAN, bound to China by Pitt Passage in time of peace, often adopt the route through Sunda Strait, instead of the passage southward of Java. After entering this strait, they may steer to the northward of the Thousand Islands, and from the North Watcher to the eastward through the Java Sea. But when in want of water and refreshments, it may be prudent to touch for supplies at Batavia.

Departing from Batavia in the North-west Monsoon, and bound to the Straits of Salayer, when clear of Edam, steer E. by N. ½ N. for some time, in order to pass well to the northward of Bumkin Island, or shoal; this is more necessary during thick weather, when observations for latitude are not obtained, because the current sets sometimes E. S. Eastward. This danger will be described in one of the following sections, under the title "Straits to the Eastward of Java;" it is about 30 leagues eastward of Edam, with Pulo Rackit to the S. S. W. of it, nearer the Java shore. If the depth of water be increased to 30 fathoms, you will pass to the northward of Bumkin Island, or Shoal, at a reasonable distance; there are, however, overfalls of 20 to 26 fathoms nearly close to it; therefore, do not borrow under 28 fathoms when passing in the night.

Bumkin Island and Pulo Rackit.

ISLANDS AND DANGERS IN THE JAVA SEA.

Carimon Java, and adjoining isles.

CARIMON JAVA, in lat. 5° 50′ S., lon. 110° 34′ E. by chronometer measured from Batavia, is a high island with an elevated hill in the centre, bearing from Edam East a little northerly, distant about 73 leagues. Adjoining to it are several small islands and rocks, some of which abound with deer, and fresh water may be got by digging on them. One of these, a flat woody island, is distant about 2½ or 3 leagues W. N. W. of the principal island; their shores are mostly rocky, and some of them are connected by reefs. A ship may anchor among these islands in 20 to 24 fathoms, ooze, and procure wood and water. The soundings about 6 or 7 leagues to the northward of them are 31 to 32 fathoms.

Lubeck.

LUBECK ISLAND, or BABIAN (the body), is in lat. 5° 49′ S., lon. 112° 48′ E., or 5° 56′ East from Batavia by our chronometers in the Anna, corresponding with the observations of other navigators, bears nearly East from Carimon Java, distant about 44 leagues, and is of considerable extent, very high towards the centre and west end, having some contiguous islets; dangerous rocky shoals front its eastern part, to the distance of 3 or 4 leagues, with 25 and 30 fathoms water about them.

Although this island is dangerous to approach at the S.E. and Eastern parts, on account of the extensive shoals, there is good anchorage in 10 or 12 fathoms, mud, on the S. E. side of the N. E. point of the island. To avoid the shoals, a ship approaching this anchorage should steer from the northward for the N. E. point of the island, from which a reef projects about two cables' lengths, with 13 fathoms water close to. Having rounded it, with a boat ahead sounding, she may steer to the southward and anchor in the bay to the S. Eastward of the point, in 10 or 12 fathoms, mud, with the Malay Town bearing W. by S. about 1 or 1½ miles distant, South extreme S. ½ E.,

To sail to the anchorage.

north point of the bay N. N. W. ½ W. about a mile, and three islands from S. E. ¾ S. to S. E. ½ E., distance off the nearest shore half a mile, and rather more than a cable's length from the mud-bank in the bay. This is the position in which the Royal George anchored in February, 1766, and procured a supply of good water, buffaloes, and poultry; some bullocks, with rice or paddy and calavances, may also be obtained; this place is, however, not frequented by English ships.

THE ARROGANT SHOAL, in lat. 5° 12′ S., lon. 113° 0′ E., by mean of the chronometers of H.M.S. Arrogant, and those of the Dover Castle, corresponding to 4 miles, is a dangerous coral shoal, discovered by the Arrogant, January 23rd, 1802, about 11 leagues N. N. Eastward of Lubeck. The boat examined it, and found the extent N.W. and S. E. about a quarter of a mile, with depths of 5 and 6 feet where she could approach with safety, there being breakers on it at the time. The depths close to the shoal were from 5 to 12 fathoms, and 25 fathoms at the distance of a cable's length. Arrogant Shoal.

This shoal is directly in the way of ships running eastward in thick weather, and should be avoided by keeping within 6 or 7 leagues of Lubeck, or in lat. 5° 25′ to 5° 30′ S. From abreast Carimon Java, 32 and 33 fathoms is a fair track; and when 6 or 7 leagues northward of Lubeck, an E. by S. ½ S. course will carry a ship 3 or 4 leagues southward of Great Solombo, in soundings from 32 to 37 fathoms: the depths then decrease to 20 and 21 fathoms about 7 leagues S. Eastward of this island.

GREAT SOLOMBO, called also NOESA LOOMBO, or CATTLE ISLAND,* bearing from Lubeck about E. ¾ N., distant 33 leagues, is an island of considerable extent and moderate height: the hill on the S. E. part being of a square shape, with a flat summit, is discernible about 8 leagues from the deck; but a long projection of low land forms the greater part of the island. I made the hill in lat. 5° 33′ S., lon. 114° 28′ E., or 7° 36′ East from Batavia by chronometers, agreeing with Captain Heywood, who made it 12° 13′ East from Malacca by the same means. Great Solombo.

LITTLE SOLOMBO, about 3 leagues to the northward, on the meridian of the former, and nearly of the same extent, is a low woody island, its eastern extremity bearing N. 2° E. from the hill of Great Solombo; the channel between them is 4 or 5 miles wide, and thought to be safe: the Friendship, proceeding from Batavia towards Amboina, passed through it in December, 1802. Little Solombo. Channel between them.

ARENTES ISLAND, in lat. 5° 10′ S., lon. 114° 36′ E., bears N. 20° E. from Little Solombo, about 6 leagues' distance; there is a little islet adjoining its south end, and a small bay with a sandy beach at that part. On the west side, this island ought to be approached with great caution, on account of the rocky spot thought to lie about 3 leagues off it, already mentioned in the directions given for sailing from Batavia towards the Strait of Macassar: but the south end of the island may be passed at the distance of 3 or 4 miles, in 13 or 14 fathoms, the channel betwixt it and the Little Solombo being safe. Arentes: adjacent danger.

Having passed to the southward of Great Solombo, steer eastward in the parallel of lat. 5° 45′ S., and endeavour to keep between lat. 5° 34′ S. and 5° 50′ S., if observations are not obtained; for the current sometimes sets N. E. towards the entrance of To sail from Great Solombo eastward.

* It is said to abound with wild cattle, and that fresh water may be got at these islands; but Captain Sheldrake, in a brig bound to Port Jackson, who anchored at Great Solombo in order to procure water and refreshments, was cut off, and his vessel taken by the Malays, which shews the impropriety of touching at this place.

Macassar Strait. This latitude ought not to be exceeded to the southward, on account of Kalkoon Islands and the shoals adjoining, for they are low islands, stretching to the northward of the large island of Kangelang, as far as lat. 6° 10′ S., and situated in about lon. 115° 47′ E. After running about 50 leagues eastward of Great Solombo, when the channel southward of the Brill Shoal is to be pursued, edge a little more to the southward, keeping in about lat. 6° 16′ S. in passing betwixt the south end of that shoal and the northernmost of the POSTILLIONS. The N. Westernmost of the Postillions is in lat. 6° 32′ S., lon. 118° 48′ E., or 11 miles westward of the Brill Shoal, by a view of it which we had from the mast-head of the Anna in passing between them.

Kalkoon Islands.

N. Western Postillion Islands.

To pass between them and the Brill Shoal.

The mid-channel track is about 6° 16′ S., and when the weather is clear, you may borrow towards the Brill Shoal in the daytime, and pass in sight of its southern extremity; but to run through betwixt it and the Postillions during the night would be imprudent if the latitude of your ship be not correctly known.

North Channel.

THE NORTH CHANNEL, formed betwixt the Brill Shoal and the Island Tanakeka, seems preferable to the former, particularly in the North-west Monsoon; for in clear weather the S.W. part of the Celebes may be seen from the north end of the shoal, and the Tonyn and Tanakeka Islands, which bound the north side of the channel will answer as guides to point out a ship's position. Prior to giving directions for sailing through this channel, it is necessary to describe briefly the neighbouring banks and dangers.

Noesa Comba.

NOESA COMBA, in about lat. 5° 15′ S., lon. 117° 9′ E., is a low island to the southward of the islands Noesa Seras, already mentioned in the directions given for sailing from Batavia towards the Strait of Macassar. These form the S. Westernmost group of the Celebes Archipelago, having irregular soundings about them; and a shoal bank is thought to stretch from Noesa Comba to the southward, rendering a near approach to it on that side unsafe.

The Aurora, November 23rd, 1816, shoaled suddenly from 35 to 10 fathoms on a coral bank, apparently about three-quarters of a mile in breadth, upon which several casts of $4\frac{3}{4}$ fathoms were got, with the appearance of less water to the southward and eastward. From 5 fathoms the depth increased gradually to 24 fathoms, no ground, steering S.W.: Noesa Comba was obscured in a squall, when she was on the bank in shoal water, which her observations placed in lat. 5° 26′ S., lon. 117° 0′ E. by chronometers, measured from the east point of Bouton.

The Sibbald Bank.

The Sibbald, Captain Forbes, March 28th, 1816, had soundings from 20 to 7 fathoms, coral, the least water upon a bank named the SIBBALD BANK, which appeared not to be extensive, although she seems to have passed over its western part, and deepened off to 60 fathoms, no ground, steering N. N.W. When in 7 fathoms on it, she was in lat. 5° 46′ S., lon. 117° 15′ E. by chronometers from Batavia; and it probably extends from lat. 5° 43′ to lat. 5° 47′ S., forming the southern limit of the banks to the southward of Noesa Comba.

The London, December 15th, 1824, in lat. 5° 46′ S., lon. 117° 4′ E., saw rocks under the bottom; hauled to S. Eastward 7 miles, and had soundings of 6 to 5, $5\frac{1}{2}$, and 7 fathoms, gradually deepening to 20 fathoms, which soundings were thought to be on an extension of the Sibbald Bank.

Caloeohij.

CALOEOHIJ, or ROTTERDAM ISLAND, is said to have good water on it,

and is distant about 9 leagues nearly East from Noesa Comba ; there is a safe channel betwixt them, very little known to English navigators.

THE HEN AND CHICKENS are a group of low islands, some of which are detached considerably from each other, being of greater extent East and West than is generally represented. They form the southern group of a chain of islands which stretches from them a great way northward. By mean of several ships' observations, with chronometers agreeing within 4 or 5 miles of each other, the southernmost islands of the Hen and Chickens are in lat. 5° 28′ S., lon. 117° 54′ E. Hen and Chickens.

A coral bank extends around these islands to a considerable distance, with very irregular depths on it in some places : it projects about 4 or 5 leagues southward of the islands, the depths on the southern part being generally from 14 to 25 fathoms, but as there are only 4 and 5 fathoms about 3½ leagues to the southward of these islands, it is prudent to keep at least 4 or 5 leagues from them : particularly as the Mangles, in December, 1805, saw the water much discoloured ahead, when in 15 fathoms about 3 leagues off them, which obliged her to haul to the southward. Bank adjoining.

SAFLANAFF, ZALINAF, or LAARS ISLAND, in about lat. 5° 31′ S., lon. 118° 25′ E. by chronometers, bearing about E. ½ S. 10 or 11 leagues from the southernmost islands of Hen and Chickens, is a low woody island, and the southernmost of a group lying on the north end of Laars Bank. This island is surrounded with breakers, and ought not to be approached ; it and the other islands may be seen 5 leagues. Saflanaff.

LAERS, or LAARS, or the BOOT, is an extensive coral bank, or range of banks, commencing at the island Saflanaff, and stretching about 5 leagues S. Westward ; it then takes a southerly direction, and extends to lat. 5° 52′ S., or 5° 54′ S. The western verge of these banks is in about lon. 117° 58′ E., and the eastern part in lon. 118° 26′ E., or 3° 58′ E. from Great Solombo by chronometers, and nearly south from Saflanaff: but in some parts their extent East and West appears to be much less. Laers Bank.

Ships generally cross over Laars Bank in lat. 5° 45′ to 5° 50′ S., although it is here *probably* of greater breadth and shoaler than in about lat. 5° 40′ S.

Captain Heywood, in H.M.S. La Dedaigneuse, December 19th, 1803, had soundings of 13 to 7 fathoms in lat. 5° 48′ S., lon. 118° 25′ E., or 3° 57′ E. from Great Solombo by chronometers, and immediately deepened off the eastern edge of the bank to no ground : the bottom had been seen several times during the preceding run of 7 or 8 leagues to the eastward.

The True Briton, in lat. 5° 47′ S., had soundings of 16 to 11 fathoms, in a run of 4 leagues to the eastward, or from lon. 118° 5′ to 118° 17′ E., when passing in January, 1802, and she saw the Hen and Chickens in Saflanaff.

The Ruby, in lat. 5° 47′ S., and 48 miles West of Tanakeka, or in lon. 118° 31′ E., had from 10 to 6 fathoms, coral rock, in 1799, in a run of 2 or 3 miles. The Revenge and Glatton, in lat. 5° 53′ S., got into 5 fathoms ; and the Althea, in 1806, had 10 and 11 fathoms in lat. 5° 53½′ S., lon. 118° 29′ E., or 1° 59′ West from Middle Island in Salayer Strait, by chronometer.

The Apollo, Captain Tarbutt, March 16th, 1813, in lat. 5° 48′ S., lon. 118° 15′ E., got into 12 fathoms, coral, Saflanaff Island, seen from the mast-head, bearing N. E. by N., which seemed to be a bank about a mile in extent : a little farther eastward she

got no ground; but seeing a proa or junk apparently fishing on another coral bank, two boats were sent to sound, and found 10 fathoms between the ship and the proa, and 6 fathoms, coral, round the latter. The ship had also from 15 to $6\frac{1}{2}$ fathoms in crossing over this bank, which appeared to extend half a mile East and West, and is in lat. 5° 48′ S., lon. 118° 20′ E.

Where these last-mentioned five ships had shoal soundings may probably be small spots detached from the eastern edge of Laars Bank, and it may be only the termination of its southern extremity.

The Anna, in December, 1806, after passing in sight of the Hen and Chickens, from the poop bearing North, steered E. by S. and E. $\frac{1}{2}$ S. 24 miles, then got a few casts of 12 to 25 fathoms, and immediately afterwards no ground: the observed lat. 5° 41′ S., lon. 118° 18′ E. by chronometer, and a low woody island, supposed Saflanaff, bore N.E.

The Mangles, in December, 1805, saw one of the Hen and Chickens bearing N. by E. $2\frac{1}{2}$ or 3 leagues, and had 15 fathoms water; shortly after another island was seen bearing N. E., with the appearance of shoal water E. by N., which obliged her to haul off South, and deepened to 25 fathoms in a run of 3 leagues, then bore away East at noon. The weather being thick, and blowing strong, no observations were obtained, and these islands were mistaken for Saflanaff and the other islands on Laars Bank: but after running East 20 miles from noon, the Island Saflanaff was seen bearing N. N. E. 5 or 6 miles distant, with many breakers to the East and westward of it, and shoal water bearing E. N. E. At this time they had 17 fathoms, and shoal discoloured water was also discerned outside, extending from S.W. to S. S.W., with an apparent clear passage from E. S. E. to E. by N.; through this she was forced to push, it being impossible to weather the southern shoal from the violence of the gale; and the least water in running through was 16 fathoms. When through this channel, they hauled up under the lee of the outside shoal, and had no ground 50 fathoms.

Dangers on the Laars Bank.

This ship's passage over Laars Bank seems to have been in about lat. 5° 34′ or 5° 35′ S., or within 4 or 5 miles of the island Saflanaff, which is too far to the northward; for, although she found a safe channel, the shoal on the outside of it is probably dangerous, and appears to be in about lat. 5° 35′ or 5° 36′ S.

The Warwick, January 5th, 1761, with Saflanaff bearing N. E. by N., distant 2 leagues, and another island E. N. E., got into $4\frac{3}{4}$ fathoms, and anchored; the water appeared very shoal all round, and the boat, in sounding, found the deepest water betwixt the ship and Saflanaff, being there from 7 to 12 fathoms. While at anchor in this situation, a hard squall made her drive, and she had instantly 9 fathoms, next cast no ground 50 fathoms. This ship approached too near to these islands; the shoal bank on which she anchored is probably not far from the place where the Mangles saw the appearance of danger. The Dutch frigate Zephyr got into $4\frac{1}{2}$ fathoms, with the above-mentioned island, seen by moonlight, bearing E. N. E.; she anchored immediately, but the anchor slipped off the shoal into 80 fathoms, no ground. The Sibbald, April 1st, 1816, having light S. E. winds, passed over Laars Bank far to the northward, and at midnight got into 9 fathoms, coral, in lat. 5° 35′ S., lon. 118° 32′ E., then tacked to southward and soon deepened; the Island Saflanaff having been seen on the preceding evening from the mast-head bearing N. N.W.

It has generally been thought, that in proportion as the distance is increased from Saflanaff to the southward, the depths on the bank increase; this does not appear to be the case. In lat. 5° 40′ S. to 5° 41′ S., the Anna, in crossing, got only a few casts of soundings, least water 12 fathoms, the bank being very narrow in that part. Other ships have crossed over nearly in the same latitude, and had no less than 11 or

Directions for passing over this bank.

12 fathoms water: whereas it appears, by the extracts given above, that several ships in crossing it to the southward of lat. 5° 47′ S. have obtained shoal soundings from 7 to 5 fathoms; and in this part, Captain Heywood found the bank to be of great extent East and West, formed of spits or patches of coral and sand.

THE FIVE FATHOMS BANK is the southernmost shoal patch yet known of those numerous coral patches, which appear to form the southern extremity of LAARS BANK. June 21st, 1813, the Apollo, returning from Amboina, at 7h. 30m. A.M. struck soundings of 5 fathoms on this bank, in lat. 5° 52′ S., lon. 118° 20′ E.; afterwards, in crossing over it, she had 8, 7, $6\frac{1}{2}$, $5\frac{3}{4}$, then deepened gradually to 15 fathoms, and to no bottom in 18 minutes after first getting on the bank, steering West. Five Fathoms Bank.

From what has been stated, it seems that the best track to cross over Laars Bank is betwixt lat. 5° 40′ and 5° 46′ S., if your position is correctly known by observation; but in thick weather, a wide berth should be given to the islands, by keeping well to the southward; for there is thought to be no danger on the southern parts of this bank, or banks. It is, however, unpleasant in a large ship to get into 5 or 6 fathoms when there is much swell, which may possibly happen; the track between lat. 5° 40′ and 5° 46′ S. seems, therefore, the best to be pursued by large ships. Best track to be pursued.

THE TONYN ISLANDS, like the other islands adjacent, are low and woody; the S. Westernmost is in about lat. 5° 31′ S., lon. 118° 36′ E., bearing East from Saflanaff, 9 or 10 miles distant. The easternmost Tonyn Island, in about lat. 5° 31′ S., lon. 118° 46′ E. by chronometer, bears East from the S. Western one, distant 10 miles; and northward of the latter there is another island. The two westernmost islands are surrounded by a dangerous shoal, which projects several miles southward of the S. Westernmost island; then it stretches eastward, nearly to the easternmost island. H.M.S. Swallow, by borrowing towards these islands, got into 3 fathoms, coral rocks, on the edge of this shoal. Tonyn Islands.

The Sibbald, April 1st, 1816, at noon, saw the westernmost Tonyn Island from the deck, bearing N. by W. $\frac{3}{4}$ W., distant 4 or 5 leagues, the easternmost island, then in sight from the fore-yard, bearing from N. E. $\frac{1}{2}$ N. to N. E. $\frac{1}{2}$ E., observed lat. 5° 44′ S., lon. 118° 43′ E. by chronometer, and they both appeared low, and covered with trees.

April 2nd, at sun-set, the westernmost Tonyn Island was seen from the mizen-rigging bearing W. $\frac{1}{2}$ N., and the easternmost island N.W. by W., distant 8 or 10 miles; from this position she steered N. E. by E. 18 miles, with a S. Easterly wind, and shoaled suddenly at midnight from no ground at 60 to 5 fathoms, immediately tacked to the southward, and deepened to $5\frac{1}{4}$, 7, 9, 16 fathoms, then no ground in 6 minutes. She made this shoal in about lat. 5° 27′ S., lon. 119° 5′ E., which is probably the shoal bank extending westward from the Three Brothers.

TANAKEKA, or TUNIKIK ISLAND, in lat. 5° 34′ S., lon. 119° 24′ E.* by chronometers from Great Solombo, bearing nearly East from the easternmost Tonyn Island, $11\frac{1}{2}$ or 12 leagues distance, has a level appearance, and may be seen 6 or 7 leagues. It is separated from the S.W. part of Celebes by a navigable channel, about 3 or 4 miles wide, with soundings from 6 fathoms towards the main, to 10 or 12 fathoms near the reef that lines the east side of Tanakeka, soft bottom in some parts, but frequently coral. In passing through, keep nearly in mid-channel, or rather nearest to Tanakeka, for the Dutch frigate Zephyr, passing through in soundings of Tanakeka and adjacent Islands. Channel within it.

* Captain A. Hamilton, of the Bombay, in 1829, made it in lon. 119° $25\frac{3}{4}$′ E.

8 and 9 fathoms, got suddenly into 6, then 3 fathoms, close to breakers, and immediately deepened to 11 and 13 fathoms in hauling over for Tanakeka, the north point of which bore W.S.W. when on the shoal; the distance from the shore of Celebes appeared to be nearly 3 miles. Regular soundings are found from Tanakeka in a southerly direction, it being safe to approach on that side; but from the islands called the Three Brothers, which lie to the N.W., there is a rocky bank stretching out to the westward, with shoal water on its northern part.

The Brill Shoal.

THE BRILL SHOAL is very dangerous, being steep to, and directly in the track of ships steering eastward for the Straits of Salayer. Returning from China in the Anna, we saw this shoal rather unexpectedly, August 7th, 1793. By noon observation, when the south end of the shoal bore W. by N., made its southern extremity in lat. 6° 5′ S., lon. 119° 0′ E.; or 1° 28′ W. from Middle Island in Salayer Strait, and 4° 32′ E. from Great Solombo by chronometer. The northern extremity of the shoal is in about lat. 6° 0′ S., or 6° 1′ S.; by a good view of it from the mast-head, its extent appeared to be about 4 miles North and South, and rather less from East to West. Having a fresh breeze, with a considerable swell, there was a continued chain of breakers round the verge of the shoal; but within the breakers the water was smooth, of a light green colour. Although the sea *probably* breaks very little upon the shoal during fine weather, it must be easily distinguished in daylight by the discoloured water. Besides, the rocks on the N.W. part are nearly even with the water's edge; as the Pitt's boat went to it in 1792, during a calm, and found only 2 feet water in some places. This shoal appears to be about 10 or 11 leagues East of the meridian of the eastern verge of Laars Bank.

PASSAGE THROUGH SALAYER STRAIT.

Sailing directions to the Straits of Salayer.

DEPARTING from GREAT SOLOMBO, when the channel northward of the Brill Shoal is to be followed, steer eastward about 50 leagues, keeping between lat. 5° 36′ and 5° 50′ S. When the meridian of the Hen and Chickens is approached, cross over Laars Bank, in the parallel of 5° 43′ S., if observations can be obtained for latitude, by day or by night. But if the latitude is not correctly determined, it will be prudent to keep a little farther southward, to avoid the dangers adjacent to the islands; in such case it seems prudent not to pass the Brill Shoal in the night, unless the latitude is ascertained within a few miles, as the currents are uncertain, and sometimes set strong to southward.

During the day, when the weather is favourable, keep in lat. 5° 43′ S., as recommended above, to get a sight of the islands from the mast-head or poop; and if the Tonyn Islands are seen, they will point out the approach to the meridian of the Brill Shoal. Having passed the islands, continue an easterly course for the S.W. end of Celebes, or to get a sight of Tanakeka at 4 or 5 leagues' distance in passing.

South-west end of Celebes.

THE SOUTH-WEST END OF CELEBES, called LAYK, or LAYKEN POINT, in lat. 5° 37′ S., lon. 119° 33′ E., should have a berth of 3 miles, on account of a coral bank projecting from it $1\frac{1}{2}$ or 2 miles; but the water shoals near it to 15 or 12 fathoms, and there are 5 and 4 fathoms on its edge. When this coast is approached, pass along it about 2 leagues distance, by steering well into Bonthian Bay when the Manfield Shoal is approached, if you intend to pass within it; and having brought Bonthian Hill to bear N. by W. $\frac{1}{2}$ W., or N. N.W., you will be clear of it, and

may then haul off shore to pass through the Salayer Strait, between Middle and South Islands.

The south coast of Celebes is fronted by a bank of tolerably regular soundings, stretching 2 or 3 leagues out from it in some places, which is a guide in sailing along in the night; but off the bay of Baakele, situated to the eastward of Layken Point, there is deep water. Turatte Point, in lat. 5° 39′ S., lies 3 leagues eastward of Layken Point; and inland to the north-westward of Bonthian Bay stands Bonthian Mountain, of *astonishing* elevation, from whence the land slopes down in ridges, until it becomes low in some parts close to the sea. South coast of Celebes.

Boele Comba Hill, in lon. 120° 9′ E. by chronometer, is not very conspicuous when first seen in coming from the westward, but when abreast it becomes an excellent mark, being a high conical hill, standing by itself on the low land near the sea, to the N.W. of Boele Comba. There is good anchorage in 7 or 8 fathoms, sandy bottom, about 2 miles off the village of Bonthian, at the north part of the bay of that name. Boele Comba also affords good anchorage; it is a small Dutch settlement farther eastward, with the hill over it bearing N. N.W. ¼ W., and the flagstaff of Boele Comba N. N.W. 2½ or 3 miles, in 6½ or 7 fathoms, sand and mud. The Sibbald anchored here April 7th, 1816, in 11 fathoms, sand, about 2½ miles off shore, Boele Comba Hill bearing N.W. ½ N., Point Lassao, the eastern extreme of Celebes, called Berak by the natives, E. ½ S., West extreme of Celebes W. ½ S., Flagstaff of Boele Comba Fort N.W. by W.; here she lay two days, and filled up her water, then proceeded along the north coast of Flores towards Amboina. H. M. ships Powerful, Terpsichore, and Drake, touched here December 17th, 1806, but could not procure good water or refreshments at this time. They however discovered Denneloang River on the east side Boele Comba Bay, and found it navigable by long boats a considerable way up, except at last quarter ebb. Here they watered speedily, by sending the boats about a quarter of a mile up the river, and filling alongside: a few buffaloes and some fruit were also procured from the natives, who inhabit several villages near the banks of the river, one side of which is under the control of the Dutch, and the other under the King of Boni. Boele Comba Hill. Anchorage. Denneloang watering river.

The Drake, at anchor about a mile off the mouth of this river, in 20 fathoms, stiff mud, and good holding ground, made the lat. 5° 34′ S., by observation, Boele Comba village bearing West, the north point of the river's mouth N. by E., south-east point of Celebes East, North Island E. by S. ½ S., South Island S. E. by E. ¾ E., and the north point of Salayer S. 58½° E. Anchorage off it.

A coral reef projects nearly 2 miles from the western point of the watering bay, and is steep to; ships ought, therefore, not to anchor under 20 fathoms, for the Powerful let go her anchor in 17 fathoms, and swung into 4 fathoms. There are brisk land and light sea breezes in this bay, during the North-west Monsoon, whilst the wind in the offing is blowing strong through the Straits of Salayer.

THE MANSFIELD SHOAL is of considerable extent; the ship of this name had soundings of 3¾ fathoms, coral rock, December 16th, 1780, with a peaked hill* bearing about N. ½ W., then distant 4 or 5 leagues from Celebes shore; and it is thought to bear about West from South Island in Salayer Strait, distant 5 or 6 leagues. Mansfield Shoal.

* Thought to be Boele Comba Hill, which is called sometimes Bonthian Hill, and lies to the N.N.Westward of Boele Comba; but that called Boele Comba Mountain by the Dutch lies in lat. 5° 23′ S., and is 5 miles to the eastward of the Flagstaff of Boele Comba.

This ship got suddenly off the shoal into deep water, and the boat was sent to examine it. With the Peaked Hill bearing from N. ½ W. to N. by W., South Island East, Salayer E. by S. to S. E. by S., and the extremes of Celebes from N. E. by E. to N.W. by W., distant 4 or 5 leagues, she had mostly regular soundings from 5 to 10 fathoms on the shoal; but it being extensive, she must have missed the shoalest parts; for where the ship got upon it there was less water, and on some parts of it the depths are said to be from 3 to 3½ fathoms.

The Sibbald, April 5th, 1816, at 10 A.M., steering East, got suddenly from having no soundings into 10 fathoms, coral, and immediately anchored, with the northern extreme of Salayer appearing like an island bearing East, the centre of South Island E. ¾ N., Berak Point or south extreme of Celebes N. E. by E., Boele Comba Hill or Peaked Hill on Celebes N. by W., and Middle Island, just seen from the mast-head, bearing about E. by N. ¾ N. The boat found 6¼ fathoms near the ship, but not less; weighed and kept her ahead sounding, and steering E. by N. ½ N., deepened in a run of 2 miles to 60 fathoms, no ground.

These soundings appear to have been obtained on the Mansfield Shoal, but not on its shoalest part, and the meridian altitude of a star at 4 A.M. made it in lat. 5° 45′ S. The Dutch frigate Maria Reygersbergen, places this shoal in lon. 120° 13½′ E. by chronometers.

There are soundings contiguous to it, which soon deepen off to the southward to no ground; but they extend from the shoal to the Celebes shore.

Other coral banks.

Besides the Mansfield Shoal, there are *said* to be two coral banks farther eastward, on one of which, January 22nd, 1800, the ship Thomas had 7½ fathoms, and saw the bottom very plainly, with the Peaked Hill N.W. ½ N., and Middle Island E. by S. ½ S., distant about 2 leagues off the Celebes shore; she hauled from it to southward, and deepened quickly to 40 fathoms, no ground. The ship Amboina, February 19th, 1800, tacked close to ripplings or breakers on the other, with Middle Island bearing East, which is a circular shoal about half a mile in extent, with a small rock even with the water, and this was a light green colour upon the shoal. When it bore South, about a quarter of a mile distant, Boele Comba Flagstaff bore N.W. 9 or 10 miles; West extreme of Celebes W. by N., and its eastern extreme E. ¾ N.; North Island E. ¼ N., and the North Point of Salayer S. E. ¼ E.

Amboina Shoal.

AMBOINA SHOAL, seen by Captain T. Harrington, of the Scaleby Castle, January 17th, 1812, about 11 A.M., when shoal water was seen on the larboard bow, steering E. by S., put the helm down with the hope of clearing it to the southward, but immediately afterwards seeing coral rocks under water, close to the ship, on the weather quarter, up helm again, and providentially cleared the shoal, although not without touching on it, at the same time there appeared to be 4¼ fathoms alongside, by the lead.

No soundings were got till close upon the shoal, and the water over it was of a *bright green* colour, with a strong rippling, but not breaking sufficiently to attract notice at any distance. The shoal appeared to be about half a mile across in an East and West direction, and immediately after clearing it, the Peaked Hill, indistinctly seen, bore N.W., Point Lassoa E. by N., body of North Island E. ½ N., Middle Island E. ¾ S., body of South Island E. S. E., North Point of Salayer S. E. by E. ¾ E., and the south-west point of Hog Island S. ¾ E.

The Lady Melville, January 2nd, 1821, at 9 A.M., saw a shoal from the mast-head, bearing about S. E. by S., with very green water all over it; it appeared to be about

2 miles in extent, and distant 1 or $1\frac{1}{4}$ miles from the ship, Bonthian Hill bearing N.W. $\frac{1}{4}$ N., North Island E. $\frac{1}{4}$ N., South Island just visible from the mast-head, our distance off the Celebes shore 10 or 12 miles, in 14 fathoms. This may probably be the Amboina Shoal, and we were from 9 to $11\frac{1}{2}$ A.M. working out between it and the Mansfield Shoal, blowing hard with thick weather, under double reefs, in soundings from 12 to 15 fathoms.

This passage inside the Mansfield Shoal seems very unsafe in the westerly monsoon, as we experienced great difficulty in getting to the southward out of Bonthian Bay, for the line of bearing of the above-mentioned shoal leaves but a narrow space between it and the Mansfield Shoal.

Other Banks. Besides the Mansfield and Amboina Shoals, which are *now* known to be dangerous, *other banks* lie to the eastward of the former, at a greater distance from the coast of Celebes than hitherto supposed, as will appear by the following extract from the Sibbald's journal; but they are probably clear of danger.

April 6th, 1816, having anchored on the Manfield Shoal at 10 A.M. yesterday, after weighing at 11 A.M. steered E. by N. $\frac{1}{2}$ N. 3 miles with a light air, and got no bottom with 100 fathoms line, till half an hour past noon, then had 22 fathoms, gravel, with several casts afterwards from 25 to 46 fathoms; when we had no ground 100 fathoms outside the western edge of this bank, South Island bore E. $\frac{1}{2}$ N., South Point of Celebes or Berak Point N. E. by E., Boele Comba N. N.W., Middle Island seen from the mizen shrouds E. $\frac{3}{4}$ N. From hence, steered about East 3 miles, and had no soundings till 5 P.M., then got round 26 fathoms, decreasing to 19 fathoms, sand and gravel, and anchored, Berak Point N. E. $\frac{1}{2}$ E., North Island N. E. by E., Boele Comba Hill N. N.W. $\frac{1}{4}$ W., Middle Island just in sight E. by N. $\frac{1}{2}$ N., North Point of Salayer E. by S., South Island East, South extreme of Celebes nearly on with the north end of North Island bearing N. E. $\frac{3}{4}$ E.

Whale Shoal. THE WHALE, called SONTELAND'S ROTZEN by the Dutch, is a shoal, about a quarter of a mile in extent, having only $2\frac{1}{2}$ fathoms, sharp rocks, on it in some places, with soundings contiguous, and between it and Hog Island, from the N.W. part of which it is distant about 4 miles. From its shoalest part the north end of Salayer bears N. N. E., and the south end of the same S. by E., on with Hog Island, which is a low island of considerable length, stretching parallel to the west side of Salayer, at a small distance. (Hog Island.)

Salayer Strait. SALAYER STRAIT, called BOEGERONES by the Dutch, formed betwixt the north end of the island of this name and the point of Celebes opposite, is separated into several channels by three islands, called generally, North, Middle, and South Islands. The South point of Celebes, which bounds the north side of this strait, is of round form, moderately elevated, covered with trees; and the coast from thence westward, embracing the bays of Boele Comba and Bonthian, is low near the sea, with high mountains inland to N. Westward. North Island is low and level, and when far off shore, coming from westward, it is seen on with the South Point of Celebes; but when viewed from eastward a wide space appears between them. The channel betwixt the Point of Celebes and North Island is not frequented by ships, although said to have 16 and 24 fathoms, soft ground.* (North Island.)

* A Dutch officer at Batavia stated to me that there were some rocks in it; that it was never used by them; and also, that a Dutch ship was lost in endeavouring to push through, betwixt the north point of Salayer and South Island.

Middle Island. Middle Island, the smallest of the three, but nearly of the same height as the others, may be discerned about the distance of 5 leagues from the deck, and is bold to approach, being steep to. I made it in lat. 5° 40′ S. by noon observation, when bearing West, and in lon. 120° 28′ E. by chronometers, or 13° 36′ E. of Batavia, corresponding exactly with other navigators.* There is a safe channel on either side Middle Island; that between it and North Island is about 3 miles wide, and since the ship Amboina found a coral bank in it, the south channel has been preferred. This ship, passing between Middle and North Islands, February 10th, 1800, got suddenly into 14, then into 8½ fathoms, rocks, with the body of Middle Island bearing South, distant about 2¼ miles, and in three casts steering S. E. she deepened to 55 fathoms. There is *probably* not less than 7½ or 8 fathoms water on this bank, and it seemed to be of small extent.

The channel between Middle and South Islands is about 4 or 5 miles wide, without soundings, clear of danger, and is generally adopted by ships passing through these straits.

South Island. South Island is larger than Middle Island, and rather higher; a coral flat projects from it to S.W. and southward, and another, fronting it, stretches out from the north end of Salayer; but, to appearance, there is a narrow gut between them, which *probably* would afford a passage to a ship in a case of absolute necessity, by the help of a good look-out kept for the shoals from the mast-head.

Salayer Island. SALAYER ISLAND, called BOEGEROENS by the Dutch, extending nearly North and South about 10 leagues, is of moderate height, well cultivated, and abounding with inhabitants. The north point, fronting South Island, is in lat. 5° 49′ S., and on the same meridian; the land over the point being rather higher than the islands adjacent, and joined to the body of Salayer by a low neck of land, makes the north end of Salayer also appear isolated, when first seen either from eastward or westward. Several proas are generally observed about the villages at the north part of Salayer; and on the N.W. side, about 3 or 4 miles S. S.Westward of the south point of South Island, there is a considerable village, with shoals and rocks stretching out from it. The Althea anchored in 28 fathoms, close to the shoals about 2 miles off shore, in August, 1806, with a view to procure refreshments at this village, but she could only get a few coco-nuts, the inhabitants being afraid of the Dutch getting intelligence of an English ship having touched there. The bottom was so rocky, that they could not purchase the anchor, and were obliged to cut from it. When at anchor, Middle Island bore N. by E. ½ E., the east end of South Island and north point of Salayer, nearly touching, N. E. ¼ N., west extreme of Salayer S. ½ W., Bonthian Hill N.W. ¼ N.; but a ship should not anchor here.

To sail through Salayer Strait. To sail through the Strait of Salayer, if you intend to pass outside the Mansfield Shoal, which is the best track with a south-westerly wind, keep out of soundings, about 5½ or 6 leagues from the coast of Celebes, when Bonthian Hill bears between N. ½ E. and N. by W.; and when the north end of Salayer is discerned, by keeping its extreme point East, but nothing to the southward of this bearing, you will pass clear on the south side of the shoal. When Bonthian Hill is visible, and brought to bear

* This longitude of Middle Island is probably a near approximation to truth; for it is *remarkable*, that Captain Heywood made it in lon. 120° 28′ E. by chronometer from Malacca in 1803, and Captain Richardson, in the same year, made it 16° 2′ East of Pedra Branca by chronometers, which places it in lon. 120° 27½′ E. The Mangles, in 1805, made it in 16° 2½′ East of Pedra Branca by chronometer, or in lon. 120° 28′ East; and Captain Clarke, of the True Briton, in 1797, made it in lon. 120° 28′ East by chronometers. In 1802, the same ship made it three miles more to the westward by chronometers. The Asia, in 1805, made it in 120° 30′ East by chronometers; and the Anna made it in the same lon. in 1806. Captain Hamilton, of the Bombay, in 1820, made it in lon. 120° 27′ E.

N. by W. ½ W. or N. by W., steer direct for Middle Island, and pass betwixt it and South Island, borrowing on either side, as the wind or circumstances require.

During the night, or in light winds, the route along the coast of Celebes, inside the Mansfield Shoal, seems preferable; here, the depths being moderate for anchoring, if necessary, with soundings extending out about 2 or 3 leagues from the shore, answers as a guide in the night, or in thick weather; whilst at such times no marks are visible from the outer channel. But in the day, when strong winds sometimes blow between West and S.W., the passage outside the Mansfield Shoal ought to be adopted: for with S.W. winds it is sometimes difficult to get out of Bonthian Bay between the shoals, particularly in thick blowing weather.

If, however, the Inner passage be pursued, after having approached the coast of Celebes, you ought to preserve the distance of 4 to 6 miles from it, until Bonthian Hill is brought to bear N. by W. ½ W.; being then past the Mansfield Shoal, edge out 4 or 5 leagues from the shore, before the hill is brought so far westerly as N.W. by N., or by the time the islands in Salayer Strait are all bold in sight from the deck. Or as soon as Middle Island is seen boldly from the quarter-deck, you should edge off, until it bear E. by N., to avoid the Amboina Shoal, then steer to pass through, about mid-channel betwixt Middle and South Islands.

ISLANDS, BAYS, &c., NEAR THE SOUTH-EAST PART OF CELEBES.

THE TONIN, or BAGLAWANG ISLANDS, are of moderate height, and stretch a great way southward of the south end of Salayer; and Tiger Islands and Shoals stretch to south-eastward and eastward of it, at a considerable distance; but this part is little known, and generally avoided by navigators. There seems, however, to be a safe passage on the east side of Salayer, for the Anna fell in with an American ship off Xulla Bessey, December 31st, 1806, which had been four days from Allass Strait, and two nights of that time lying-to, with strong westerly gales. Being unable to fetch the Straits of Salayer, she bore away round the south end of that island, and passed along the east side of it to the northward.

Tonin Islands.

Passage East of Salayer.

BONI, or BUGGES BAY, is formed by the two southern prongs of Celebes, and stretches about 3 degrees northward, into the middle of the island. The navigation of this bay is rendered dangerous and intricate by numerous shoals, and, being little known, a ship intending to proceed into it in order to trade must be guided by a good look-out, with boats sounding ahead, there being moderate depths for anchorage among many of the shoals. The river and principal town of Boni are situated near the head of the bay on the west side, in about lat. 3° S.; there is good anchorage off it in 8 or 10 fathoms water.*

Boni Bay.

CAMBYNA is a large island, inhabited and cultivated, rising steep and rugged from its western extremity towards a high peak in the centre, where it breaks into hills, two of which form its eastern end; it lies to the westward of the south entrance of Bouton Strait. The peak is in about lat. 5° 21′ S., lon. 121° 57′ E.,† or 1° 29′ E. from

Cambyna.

* This place has been at times visited by one or two ships from Bengal, with opium and piece-goods, in expectation of receiving gold dust, &c., in return for those articles; but these ships were generally disappointed in their prospects of a lucrative trade.

† Captain Hamilton, in 1820, made it in lon. 121° 51′ E.; the centre of South Island, off Bouton, he made in lon. 122° 30′ E., and Hegadis in lon. 122° 30′ E.

Middle Island in Salayer Strait by chronometers; and the south end of the island is in lat. 5° 30′ S. Off the south or S. E. end there are one or two small isles; and about 2 or 3 miles from its S.W. end lie three more isles, very low, with breakers projecting 2 or 3 miles from them; these ought not to be approached, particularly in the night.

South Island. SOUTH ISLAND, in lat. 5° 40′ S., lon. 122° 30′ E., bearing nearly West from the south end of Bouton, distant about 12 miles, is 5 or 6 miles in extent, of moderate height, formed of sections or strata of rock, and being on with the south part of Bouton in coming from the westward, it is not discerned until nearly approached. There are some small isles adjoining; two of them lie to the northward of South Island, fronting the south entrance of Bouton Strait, and are generally called Middle and North Islands.

Hegadis. HEGADIS, in about lat. 6° 13′ S., lon. 122° 40′ E., bearing nearly South from the south point of Bouton, is an island of middling height, on the south side the channel; Greenwood Island lies to the eastward, nearer the southern Token Besseys.

Bouton Island. BOUTON ISLAND is generally high, or of middling height, hilly at the south part, with numerous huts scattered between the rocks near the sea and the summits of the hills.

Bouton, South Point, with sailing directions. Bouton South Point is in lat. 5° 42′ S., lon. 122° 44′ E., or 2° 16′ East from Middle Island in Salayer Strait by chronometer. Captain Heywood, in 1803, and Captain Clarke, of the True Briton, in 1796, made it exactly in the same longitude by chronometers. This point bears nearly East from Middle Island in Salayer Strait, distant 45 leagues; and a course steered E. $\frac{1}{2}$ S. will lead a ship in the fair track to the southward of Cambyna and South Island, at a moderate distance from both, if there is no oblique current. There are no soundings in this track, all the islands being steep to.

East point of Bouton. Bouton East Point, in lat. 5° 15′ S., lon. 123° 15′ E.,* or 2° 47′ E. from Middle Island in Salayer Strait by chronometer, is a long, low, level point, projecting into the sea, having behind it, up the country, a piece of remarkable table-land. The coast between it and the south end of Bouton forms a considerable bight, and a reef projects from the S.W. point of this bight, with foul ground stretching farther to the south-westward along the shore. To the northward of the east point, an extensive and deep bay, about 8 or 9 leagues wide, called Dwaal or Deval Bay by the Dutch, is formed betwixt it and the N. E. part of the island. The north point of this bay bears nearly N. by W. from Bouton east point, and a direct course may be steered from point to point without hauling far into the bay.

Calansoesoe Harbour. Calansoesoe Harbour, or Son Bay, is at the northern extreme of Dwaal Bay to the westward of its north point. This is a kind of road or harbour, with soundings of 30 to 55 fathoms at the entrance, and to the westward near the shore. The Dutch ship Hope, bound to the Spice Islands, being late in the season of 1791, took shelter in this place, where she lay during the South-east Monsoon, and constructed a plan of it. From this plan, it appears that care is required in entering between the shoals on the east side, and those fronting the isles that bound the western side of the road, which seems to be sheltered from the sea by shoals projecting from the point on the east side.

* By Capt. C. R. Drinkwater Bethune, 123° 20′ E.

Rice, poultry, and other articles of refreshment, may be procured at the village on the N. E. side of the bay.

This bay was visited by Captain Tarbutt, in the Company's ship Apollo, March 28th, 1813; she anchored in 27 fathoms, with the south point of the bay bearing S. ½ E., north point of the Inner Bay, S. E., south point of ditto S.W. by S., and made the lat. 4° 55′ S., lon. 123° 11′ E. by chronometers. A guide was procured from the Rajah, who carried the launch and cutter to a fresh water river, as the well near the village was emptied by filling only three casks.

This bay appeared unsafe, having overfalls from 80 to 30, 15, and 5 fathoms, and not more than 2 or 1½ fathoms upon some banks of coral.

The land contiguous to the sea is level from the eastern point of this bay, to a considerable distance northward, and may be coasted within a moderate distance to the north-east end of Bouton, situated in lat. 4° 23′ S., lon. 123° 4′ E. A little inland from the north-east point of Bouton there is a small peaked hill, like a sugar-loaf. *North-east end of Bouton.*

BOUTON STRAIT, formed betwixt the west coast of that island and the opposite Island of Pangasani, is now seldom used, the passage round the east side of Bouton being safer, and generally more expeditious. The passage through the strait was formerly much frequented by European ships, although it is only three-quarters of a mile or a mile wide in the narrowest part; the Cornwallis and some other ships, which have passed through it not long ago, found no less than 10 or 12 fathoms water. *Bouton Strait.*

The south entrance is formed betwixt North Island and the south end of Pangasani; here, no soundings are obtained, and a reef extends a considerable way from North Island. The coast of Bouton is cultivated and well inhabited; supplies of poultry, fruits, and other refreshments, may be procured at the town of Bouton, in lat. 5° 27′ S., lon. 122° 40′ E., a little inside the south entrance of the strait, upon the shore of Bouton. The Lord North, in August, 1782, moored in 9 fathoms, sand, with the stream anchor to the northward in 17 fathoms, and had the Flagstaff bearing S. by W. ½ W., the watering place E. N. E. 3 miles, and the wooding place on Pangasani N.N.W., off shore about half a mile. Some Dutchmen generally reside here; but it is prudent to be prepared against any treachery, for the inhabitants of these islands ought not to be trusted. *Town of Bouton.*

The tides are moderate, and will assist a ship in drifting through the strait in light winds, with boats ahead, to keep her in the fair track, which is generally about mid-strait, or rather nearest the Bouton shore, in some places. Although in a few parts the water is very deep, convenient anchorage may often be got in moderate depths of ooze or mud; and in some places the bottom is sand and coral. A shoal projects a little way from the N.W. end of Bouton, which must have a berth in passing; and when clear of it, the channel leading out of the north entrance of the strait takes an easterly direction betwixt the north end of Bouton and Weywongy Island. Approaching this entrance from the northward, it is not perceived until near; and a remarkable rock, hollow below, with bushes on its summit, lies at the entrance, on the Bouton side, being connected with that shore at low water. The fishing stakes contiguous to the shore on either side the strait ought to be avoided, as they are placed in shoal water. The shores at the north part rise on both sides perpendicularly from the sea. *Tides.*

There is another channel to the westward of Pangasani, betwixt it and the coast of Celebes; but having a number of small isles in it, with several shoals, it is thereby rendered intricate, and never attempted by large vessels.

Weywongy and Waxway.

WEYWONGY, on the north side of the northern entrance of Bouton Strait, is a high land of considerable size; the body of it is in about lat. 4° 3′ S. WAXWAY, farther northward, fronting the coast of Celebes, is also a considerable island, high in the centre, with a declivity towards the sea. The centre of this island is in lat. 3° 34′ S., lon. 123° 14′ E. Close to Celebes coast, from the entrance of Bouton Strait, a great way northward, there are soundings in many places, where a ship might anchor in case of necessity, but several shoals are interspersed along this part of the coast. Captain Drinkwater Bethune, when passing Waxway, in H. M. S. Conway, observed the sea to be of a remarkable white colour, as if over a shoal chalky bottom; there were no soundings, however, with 40 fathoms.

Instructions for the passage outside of Bouton.

THE PASSAGE outside BOUTON is now in general use; and to proceed by it, you should approach the S. E. point of Bouton within a few miles, if the wind be westerly, and keep the coast aboard to the east point, to prevent being set over towards the southern Token Besseys Islands, by southerly currents and light airs, which frequently prevail in the offing. Captain Seton, in the Helen, was delayed by faint airs and southerly currents on the east side of Bouton, from February 23rd to March 6th, 1795. Although he sounded often in different parts, within 1 and 2 miles of the shore, no ground was got with 100 and 120 fathoms line. Other navigators have found the eastern coast of Bouton equally steep; yet it has been reported that there is a shoal off the eastern shore of Bouton, in about lat. 5° 30′ S., but it *probably* has no existence.

Token Besseys.

TOKEN BESSEYS, or TOUCAMBASO, is a large group of moderately elevated islands, extending nearly N. N.W. and S. S. E., their western sides forming the eastern boundary of the channel on the outside of Bouton. The north-westernmost of these islands, called Wangiwangi, may be seen about 7 or 8 leagues from the deck, and appears to be the largest of them. I made the body of it in lat. 5° 15½′ S., lon. 123° 33′ E. by chronometers, corresponding with several other English navigators;* the nearest part of it bears directly East from the east point of Bouton, about 6 or 6½ leagues distant, this being the breadth of the channel between them. These islands [illegible] been considered dangerous to approach all round, which is not the case, for the [illegible]ernmost island may be approached within 2 or 3 miles on the north and west [illegible] here being no soundings at this distance, nor any appearance of danger above 1½ miles from the shore. It is inhabited, abounds with coco-nuts, and the rocks or shoal water project only about a mile off shore: the westernmost island appears also safe to approach on the west side; but there is a large shoal, dry in some places, near the S. Western island. The Orpheus frigate grounded on the east side of the N. E. island, in May, 1796, not far off shore; but it is only in a south-easterly, south-westerly, or southerly direction from these islands that shoals are known to exist. Most of them are inhabited, but they are destitute of anchorage, the islands and reefs being steep to.

Between some of the Token Besseys there are channels, through which ships have been known to pass with safety in daylight; but it seems not prudent to run for any of them, except in a case of necessity. The Supply brig, Lieutenant Ball, from Port Jackson, bound to Batavia, in June, 1790, passed about 2 leagues northward of St. Matthew Islands, and soon after saw Token Besseys to the S.W.: when near the

* The Dutch frigate Maria Reygersbergen, in 1805, made it in lat. 5° 17′ S., lon. 123° 33′ E. by chronometers; and Captain A. Hamilton, of the Bombay, in 1820, made it in lon. 123° 33′ 12″ E. by chronometers.

latter, steered W. S.W. betwixt the northern islands and others, and passed a sand-bank at noon, having some bushes on its north end, and a spit stretching 3 or 4 miles southward, with high breakers on it. The islands were cultivated, and a proa came off loaded with coco-nuts at 4 P.M.; soon after a shoal was seen extending from W.N.W. as far as the eye could reach, in a S. Easterly direction, distant about 6 miles; therefore, hauled to the wind, and lay during the night under the nearest island, called Combado by the natives. At daylight made sail, steered W. N.W., and ran along the eastern side of the shoal, keeping about 4 miles off. It was found to be very extensive, bounded on the eastern side by rugged rocks, and there are no breakers on it when the sea is smooth. This shoal seems to front the S.W. part of the Token Besseys, and the north end of it was rounded at 4 P.M. about 2 miles distance; from thence, the Supply steered for the south end of Bouton, and passed it early in the following morning.*

Besides the large group of Token Besseys mentioned as above, other detached islands, which go by the same general name, extend to about lat. 6° 18′ S., with safe channels betwixt several of them; but, on account of some shoals adjacent, they are seldom approached close by ships. The southernmost of these islands, called Pinnunko by the natives, and in the Dutch charts Pirocka, is of considerable size, and moderately elevated, having a large bay on the S.W. side; but its shores are steep, without anchorage. The south end of this island is situated in about lat. 6° 14′ S., lon. 124° 1′ E., by observations taken in the Boddam and Taunton Castle, when passing to the southward. About 8 or 9 leagues to the eastward of it they rounded another island, supposed Velthoens, making it in lat. 6° 10′ S., lon. 124° 25′ E.; but Velthoens Island seems to be situated more easterly, as will be seen by the description of that island.

The Henry Addington, December 25th, 1796, at 2 P.M., saw a low flat island, about 1½ miles in length, covered with trees, bearing N. by E. about 10 miles; and from the mast-head another of the same appearance, bearing W. N.W. Kept away N. E. to go to leeward, and hauled up as we passed the easternmost island, which at 4 P.M. bore W. N.W. 7 or 8 miles, when we made it in lat. 6° 9′ S., lon. 124° 19′ E., and the other in lat. 6° 18′ S., lon. 124° 12′ E. These seem to be the S. Easternmost of the islands which lie to the southward and eastward of Token Besseys; they require great caution in passing, as they are very low, and could not be seen in the night or in thick weather until close upon them.

VELTHOENS ISLAND, the S. Easternmost of the Token Besseys, is in lat. 5° 58′ S., lon. 124° 48′ E., or 3° 27′ West of Amboina by Captain Heywood's chronometers, who passed near the east side of it, February 26th, 1803, in H.M.S. Dedaigneuse. He describes it to be low, covered with trees, about 5 miles in extent, without any appearance of danger on that side. Captain Gardner, in the Castlereagh, bound from Bombay to China, after steering along the north coast of Flores, saw Velthoens Island at day-break January 1st, 1809. It appeared to extend from about lat. 6° 0′ to 6° 8′ S., and he made the eastern part in lon. 124° 42′ E.† When it bore from W. by N. Velthoens Island.

* Captain Bristow, commanding a southern whaler, passed also to the westward among the Token Besseys, having fallen to leeward when blowing strong. Captain William Greig, in the Minto, passed from the southward through the group of Token Besseys, leaving several of its low islands on both sides.

† The Addington passed on the East side of Velthoens Island December 24th, 1796, and made the east end of it in lat. 6° 9′ S., lon. 124° 40′ E., having come through the Ombay Passage betwixt the east end of that island and Wetter, in her route towards the Pitt Passage. Velthoens Island is called sometimes Coco, or Koko Island.

to W. by S. ½ S., 8 or 9 miles distant, the side fronting the sea had a white chalky aspect, which, seen in contrast with the bushes or trees that cover this low island, might have been mistaken for breakers at a greater distance: at this time distant land was seen to the westward, probably Pirocka Island. On the north and east sides, Velthoens Island appeared bold to approach, and free from danger; but a reef projects a great way from it S. Westward. After rounding this island, the Castlereagh weathered the west end of Bouro so far as scarcely to see it.

Captain Williams, in the Thames, January 5th, 1797, made Velthoens Island in lat. 6° 8′ S., lon. 124° 48′ E. by chronometer; and returning from China in the same year, August 20th, he made it in lat. 6° 8′ S., lon. 124° 30′ E. by chronometer. The true longitude of this island, therefore, seems to be between 124° 42′ and 124° 48′ E.* Variation near it 1° 11′ East in 1823.

St. Matthew Islands.

ST. MATTHEW ISLANDS, in lat. 5° 18′ S., the body lon. 124° 16′ E., are two in number, rather higher than Velthoens Island, and they extend in a N.W. and S. E. direction about 4 or 5 leagues. The southernmost is largest, separated from the other by a space about 4 miles, a reef of breakers uniting them, and stretching out about a league to seaward. They are about 15 or 16 leagues eastward of the northern Token Besseys; betwixt which and St. Matthew Islands, and also betwixt the latter and Velthoens, the passage is thought to be safe, with the assistance of a good look-out in the daytime.

The Apollo, April 2nd, 1813, during a light breeze, and not having steerage way, was drifted by the current towards the northern St. Matthew Island, and carried at the rate of 4 miles an hour, within a quarter of a mile of the reef that projects from its N.W. point; when this point bore W. N.W. the current set to S. E., and after passing through a strong eddy and a rippling, it changed and set again to eastward. At noon, when St. Matthew Island S.E. point bore S. by W., and the N.W. point W. ½ S., observed lat. 5° 17′ S., lon. 124° 16′ E. by chronometer. Observations taken in the Dutch frigate Maria Reygersbergen, in 1806, made the east extreme of St. Matthew Islands in lat. 5° 20′ S., lon. 124° 18½′ E., and their western extreme in lat. 5° 18′ S., lon. 124° 12½′ E. by chronometers. Variation 0° 30′ E. in 1813.

To approach the northern Token Besseys from the eastward.

Ships bound westward in the South-east Monsoon should steer for the northernmost of the Token Besseys and round it within 3 or 4 miles; for some ships by steering wide of these islands have been unable to weather, or beat round the south end of Bouton against the northerly currents which at times prevail, and have been obliged to proceed through Bouton Strait.

PITT PASSAGE.

To sail from Bouton towards Xulla Bessey.

WHEN BOUND eastward through Pitt Passage in the North-west Monsoon, after reaching the N. E. end of Bouton, steer northward to approach the Island Weywongy, if N.W. winds blow strong, then stretch off for the south end of Xulla Bessey. This seems necessary in ships which sail indifferently during the month of December and in the early part of January, because N. N.W. or N.W. winds and southerly currents prevail at times. The wind and currents in Pitt Passage are, however, *frequently* variable, by which a ship may proceed almost in any direction; but in passing through, it is prudent to preserve the windward side of the channel, if northerly winds

* When bearing from N.W. ¾ W. to N.W. by W. ¾ W., distant 8 or 9 miles, it appeared to the Royal Charlotte, in 1797, as two islands, which are called Coco Islands in her journal; and she made the easternmost part in lat. 6° 9′ S., lon. 124° 55′ E. by lunar observations.

predominate. Do not lose time working round the N.W. end of Bouro, if you happen to fall to leeward with northerly winds; but in such case, pass along the south coast of Bouro, and proceed round the east end of that island into Pitt Passage. During the whole of the North-west Monsoon, ships from Amboina are enabled to proceed to the northward, by keeping close in with the east end of Bouro, where they get variable breezes and land squalls. Here, they seldom experience much current, and sometimes a drain in their favour; but close over to Manipa, and betwixt it and Ceram, the current frequently sets strong to the S. Eastward in this season.

THE XULLA ISLANDS are four in number, and of considerable magnitude. Xulla Bessey, the southernmost, is of considerable height, may be seen 12 or 13 leagues, and has a level aspect when viewed far off. Its S. E. point is in about lat. 2° 28′ S., and I made it in lon. 125° 58′ E. by chronometer, which is exactly the mean of six ships' chronometers, nearly agreeing with each other. From thence it extends about 11 leagues N. by W. ½ W., the N. E. point being in lat. 1° 58′ S., the N.W. point nearly on the same parallel, and in lon. 125° 48′ E. This island is cultivated and well inhabited, abounding with wax and honey, and seems to be the only one of these islands where a ship might procure refreshments; there is a village near the S. E. point where the Dutch have a fort. The northern part of the island is surrounded by a coral reef, at the distance of 2 or 3 miles, leaving a channel about 3 or 4 miles wide betwixt it and Xulla Mangola, with anchorage from 30 to 35 fathoms near the shore of the latter, which is bold to approach. This channel extends nearly East and West, with currents running through it about 3 and 4 miles an hour, which shift at times, and form a kind of tides. A ship coming from the eastward, and intending to pass through, should keep the Mangola shore aboard, until near the small island situated to the westward of the passage, then she may haul to the southward.

Xulla Islands. *Xulla Bessey.* *Channel northward of it.*

The other three islands form a chain, extending East and West about 36 leagues, and are high bold islands, thinly inhabited. Xulla Mangola, the middle one, is high in most places, particularly at the N.W. part the land is high and rugged; Xulla Talyabo, the western island, is also high. It has been observed, in the directions for the Return Passage from China on the west side of the Philippine Islands, at the article Molucca Passage, that there seems to be no safe passage betwixt the westernmost island, Xulla Talyabo, and the middle one, Xulla Mangola.

Lissamatula, the easternmost and smallest of the Xulla Islands, is separated from the east end of Xulla Mangola by a narrow gut; it is moderately high and level, having along its north and east sides several white cliffs, which are conspicuous at a considerable distance. The S. E. point of this island is in lat. 1° 46′ S., lon. 126° 32′ E., or 1° 43′ West from Amboina by chronometer; and off this point lies an islet, which forms like a saddle in coming from the northward.

Lissamatula.

GREYHOUND STRAIT, through which Captain Elphinstone passed in the Greyhound frigate, is the passage between the west end of the westernmost Xulla Island and Hammond Island. The coast forming the west end of Xulla Talyabo, stretches nearly North and South, having in lat. 1° 58′ S. a Haycock Island close to its S.W. point, from which Skelton Island bears North 13 miles, and lies to the N.W. part of Xulla Talyabo, with several isles stretching from it near the Xulla shore to N. E. and eastward along the north coast of the latter, fronted by a large and dangerous shoal in lat. 1° 34′ S.

Greyhound Strait.

Middle Island, distant about 2½ or 3 leagues West from Skelton Island, is low,

swampy, covered with trees, surrounded by shoal water to the distance of three-quarters of a mile, and betwixt these is the eastern channel through Greyhound Strait, The western channel is formed to the westward of Middle Island, bounded to the westward and S. Westward by Albion Island, distant about 3 or $3\frac{1}{2}$ leagues from the former, having other islands to the westward and southward.

The Albion, Captain Skelton, passed northward through these straits November 22nd, 1812, having previously experienced a strong current running to the westward between Timor and Ombay, in October and November; she went through the Strait of Flores, then to the eastward of Token Besseys, and afterwards through the eastern channel of Greyhound Strait, and found it a safe and clear passage, leading to the Pacific Ocean.

In returning from N. Eastward, she passed through the western channel in November, 1813, and on the 20th anchored in 19 fathoms, coarse sand, about $1\frac{1}{2}$ miles off the S.W. side of Middle Island, and cut a supply of firewood. When Middle Island bore S. E. by E. 9 miles, and Albion Island S. by W. 6 miles, she had 100 fathoms water; from thence steering S. E. for the former island, the depth decreased regularly till she anchored near it in 19 fathoms. From hence, she steered S. E. by S. towards the Haycock, in soundings of 12 to 20 fathoms, to the distance of 7 miles from Middle Island, then deepened to 50 fathoms in a run of 4 miles farther; at noon, observed lat. 1° 58′ S., Haycock bearing East 5 miles, no bottom. In November, land and sea breezes were experienced, with regular tides running North and South about 3 or $3\frac{1}{4}$ miles per hour: all the islands, except the Haycock, are mostly low and woody.

The same ship passed southward through the eastern channel, with a strong breeze and pleasant weather, February 4th, 1814; and she carried soundings of 20 to 35 fathoms between Middle Island and Skelton Island, keeping about 2 miles from the latter, in the eastern side of the channel, deepening as she approached the Haycock.

Captain Drinkwater Bethune, of H.M.S. Conway, passed through the Greyhound Strait on his passage from Canton to Batavia in 1841, and remarks, "There appeared to be some shoal spots in the neighbourhood, and the two islands marked on the chart to the southward of the strait do not exist."

From the Haycock, Middle Island bears N.W. by N., distant 15 miles, and Albion Island bears from it N. W. by W. $\frac{1}{2}$ W. about 18 miles. The Haycock and Skelton Islands, which form the eastern limits of these straits, lie on the same meridian, in lon. 124° 36′ E. by the Albion's journal.

North coast of Bouro.

BOURO is a high island, and has a semicircular mountain on the N.W. part, resembling a dome, which may be seen 25 or 30 leagues off in clear weather. The N.W. end of the island is in lat. 3° 6′ S., lon. 125° 57′ E., or 5° 28′ E. from Middle Island in Salayer Strait by our chronometers in the Anna, corresponding with the mean of seven other ships' chronometers; it bears S. 2° W. from the S. E. point of Xulla Bessey, distant about 13 leagues.

The north coast of Bouro is bold and safe to approach, there being no soundings except very near the shore at the N.W. part, where a spit is *said* to project a little way: the northern extremity of the island is in lat. 3° 2′ S.; and the N. E. point, which forms the north side the entrance of Cajeli Bay, is in lat. 3° 15′ S., lon. 127° 5′ E., by mean of six ships' chronometers.

Gomona.

GOMONA, in lat. 1° 56′ S., lon. 127′ 38 E., or 37 miles West of Amboina Flagstaff by chronometer, bearing from the S. E. point of Xulla Bessey E. by N. $\frac{1}{2}$ N., distant

35 leagues, is a small island lying near the south coast of Oby Major, of middling height, and sloping from the centre towards each end. These islands bound the north side of Pitt Passage in this part, and Ceram the south side. The coasts of Oby Major and Ceram, are mostly high, and safe to approach, but the S. E. end of the former is low land. All through Pitt Passage the land, being generally high, may be seen on each side when the weather is clear.

Oby Major and Ceram.

HAVING entered PITT PASSAGE, betwixt the south point of Xulla Bessey and Bouro, steer E. by N. ½ N. to E. N. E., which will carry you directly through it to the entrance of Pitt Strait, if there is no lateral current; observing, not to borrow towards the islands on the northern side, if the wind incline from that direction, with a southerly current prevailing.

To sail through Pitt Passage into the Pacific Ocean.

When the east end of Oby Major is approached, continue to steer to the eastward, if the route by Dampier Strait is to be chosen for entering into the Pacific Ocean; but many persons prefer the Gillolo Passage, for the following reasons: it is spacious, the islands on each side are bold to approach, and clear of hidden danger, there is good room for working by night or by day, and the tides or currents in it are seldom strong: besides, ships which go out by this passage run no risk of getting on the Buccleugh Shoal, or of being embarrassed with the coast of New Guinea. Other navigators, however, prefer the passage through Dampier Strait, because they sometimes get variable and favourable breezes to run them speedily out clear of Point Pigot; whilst ships proceeding through the Gillolo Passage are liable to be retarded in beating out against northerly or N. E. winds, and a heavy swell frequently rolling in from the ocean. And although the tides in Dampier Strait are very strong, and there are several dangers in it, steep to, there is anchorage in the narrow part; and if ships round Point Pigot pretty close, they will run little risk of getting embarrassed with the coast of New Guinea.

The Gillolo Passage seems preferable *early* in the season, but in January and February, when N. E. winds approach the equator, the route through Dampier Strait should probably be followed by ships which sail indifferently. In March, the Gillolo Passage may be adopted, for the N. E. winds then begin to abate.

The Castlereagh left Bombay in November, 1808, went through Allass Strait along the north coast of Flores, round the west end of Bouro, then through Pitt Passage and Dampier Strait, and was only seventy days from Bombay to China. From Dampier Strait she carried strong westerly winds to the Pellew Islands, whilst other ships, which went out by the Gillolo Passage about the same time, experienced light baffling winds, and were nearly five weeks accomplishing what the Castlereagh did in a few days, which seems to shew that the latter passage is *sometimes* tedious.

GILLOLO PASSAGE.

THE GILLOLO PASSAGE, formed betwixt the Islands Gillolo and Waygiou, is separated into two branches, by Geby Island stretching across nearly in the centre. The channel between it and Gillolo is *generally* known by the name of Gillolo Passage. That to the eastward of Geby, betwixt it and Waygiou, is *sometimes* called Bougainville Passage, this circumnavigator having sailed through it in 1772; the Duke and Duchess privateers had previously gone through it in 1710. Of late years several English ships have passed between Geby and Waygiou;* but the small islands with

Gillolo Passage.

* Also several of the French surveying frigates.

some rocky islets above water, which are scattered over this channel, make the western or Gillolo Passage preferable.

The channels between the islands leading from Pitt Passage into the Gillolo Passage are all thought to be safe. That betwixt Pulo Gasses and Kekik being wide, is generally preferred in the North-west Monsoon; for the other wide channel betwixt Pulo Pisang and the Boo Islands is *then* too far to leeward, but it may be adopted by ships coming from northward during the South-east Monsoon.

Lookisong.

LOOKISONG, or LANDSCAPE ISLAND, so named by the Malays from its pleasant aspect, extends nearly N. N. E. and S. S.W. about 3 leagues, fronting and near to the east end of Oby Major, and it is sometimes called Great Pulo Gasses. It is of moderate height, well wooded, stretching with a remarkably even slope to the low point that forms its northern extremity; the south end is in about lat. 1° 45′ S., lon. 128°10′ E. The channel betwixt this island and Oby Major being very contracted, subject to calms or baffling winds from the adjoining high land, is not used by ships. There is a small island, called Long Island, contiguous to the north end of Lookisong.

Pulo Gasses.

PULO GASSES, distant about 7 or 8 miles eastward of Lookisong, and nearly of the same height, is a flat table-land, for about three-fourths of its extent, sloping down at each end, with a spit of rocks stretching from the S. E. end about a cable's length. The south point is in lat. 1° 41′ S., lon. 128° 20′ E., or 5 miles East of Amboina by chronometers: the island has a sandy beach, but no soundings are got at 1 or 2 miles distance, and 40 fathoms were found at the south end, about a ship's length from the shore.

The Moffatt, December 14th, 1824, had soundings of 42 fathoms, coral rock, about half a mile off, with the north end of Pulo Gasses bearing N. N. E. ¼ E., the S. E. end E. by S. ½ S., south end of Lookisong W. by S. ¼ S., north end of Long Island N.W. by W. Stood N. N.W. about a quarter of a mile, then no ground at 50 fathoms.

The Minstrel, November 15th, 1823, had 85 fathoms, grey sand and shells, about 2 or 2½ miles off Pulo Gasses, its north point bearing N. 54° E., south point N. 79° E., north point of Lookisong N. 55° W., south point S. 68° W., and Long Island N. 56° W.

Its adjoining strait.

The channel near to this island and Lookisong, called by some persons Gasses Strait, and formed between Pulo Gasses and Lookisong, is safe, and should be adopted with a westerly wind; but the channel eastward of Pulo Gasses, being wider, seems preferable with a working wind in the night.

Kekik; islands near it.

KEKIK, in lat. 1° 33′ S., lon. 128° 37½′ E., bearing N. E. by E. ¾ E., 6½ leagues from Pulo Gasses, is a high island. Lawn, in lat. 1° 34′ S., distant about 2 leagues eastward of Kekik, is also a high island, with an islet off each side of it, and another in the form of a button betwixt it and Kekik.

Pulo Pisang.

PULO PISANG, the highest of these small islands, forms in two hills resembling each other, and may be seen 11 or 12 leagues; it is situated in lat. 1° 23′ S., lon. 128° 53′ E., or 2° 25′ West from Point Pigot, measured by our chronometers, and Captain Heywood made it 37 miles East of Amboina by chronometer.

Boo Islands.

THE BOO ISLANDS, in lat. 1° 12′ S., lon. 129° 18′ E., distant about 9 or 10 leagues E. N. E. of Pulo Pisang, consist of a group of small low islands, more than 10 or 12

in number; and they bear West from the west end of Pulo Popa, distant 5 or $5\frac{1}{2}$ leagues, this being the width of a safe channel formed between them, leading to Dampier Strait, also into the Gillolo Passage. These islands are inhabited, and produce coco-nuts; dried fish and a few goats may also be procured, according to the description of Captain Forrest, who touched here in 1775; he anchored in 15 fathoms, close to a small sandy island, having upon it some coco-nut trees.

Directions for entering the Gillolo Passage.

To enter the Gillolo Passage by the channel betwixt Pulo Gasses and Kekik, haul close round the south end of Pulo Gasses, to prevent being carried past the channel by the current, which frequently sets to the eastward. After rounding Pulo Gasses, the highest of the group of Dammer Islands, that lie off the south end of Gillolo, will begin to appear from the deck in the form of a saddle, the southernmost of which, in about lat. 1° 11′ S., bears nearly N. N. E. from the north end of Lookisong, distant $8\frac{1}{2}$ or 9 leagues; the largest of them is generally called Pulo Dammer.

Black Rocks, or Fairway Ledge.

BLACK ROCKS, or FAIRWAY LEDGE,* in lat. 1° $8\frac{1}{2}$′ S., lon. 128° 30′ E., bearing about E. N. E., distant 6 miles from the southernmost of the Dammer Islands, is a low ridge of rocks extending E. N. E. and W. S. W. about 2 miles, part of which, near the eastern extreme, being about the height of a small ship's hull above water, and from thence it extends in a low ridge 2 miles W. S. W., with a continuation of breakers some distance farther towards the Dammer Islands. This danger was not known to English navigators until explored by Captain Welstead, of the General Harris, on his passage from Bombay to China, in 1818; he passed between Pulo Gasses and Lookisong, January 13th, and found this channel very safe. Lookisong was approached close at the south part, and was observed to be nearly close to the east end of Oby Major, apparently admitting no safe passage for ships between them. After passing through Gasses Strait, in steering N. N. Eastward for the Gillolo Passage, the Fairway Ledge was discovered, which is much in the way of ships steering towards the south point of Gillolo, particularly if they borrow near the Dammer Islands on account of westerly winds. Ships, therefore, passing here in the night, should keep well to the eastward when near the latitude of the south end of Gillolo, giving a wide berth to the Dammer Islands, and the Fairway Ledge, for there are no soundings to denote the proximity of this dangerous ledge.

Weeda Islands.

THE WEEDA ISLANDS are low, covered with wood, and form two compact groups, the southernmost bearing N. $\frac{1}{2}$ W. from Kekik, and N. N. E. from the south point of Gillolo, and in about lat. 0° 40′ S. The centre of this group lies N. N. Eastward of the south point of Gillolo, distant 3 or 4 leagues, and it seems safe to approach, there being no ground with 100 fathoms line, within 2 miles of it on the east side. The other group lies about $2\frac{1}{2}$ or 3 leagues W. N. Westward of the former, in the bight to the N. W. of Gillolo South Point.

Gillolo South Point.

GILLOLO SOUTH POINT, called COCO-NUT POINT, in lat. 0° 48′ S., lon. 128° 28′ E., has a knob on it, but the land near it is rather low and uneven, and the coast between it and Point Tabo, forming a deep semicircular bay, is not seen in steering a direct course for the latter. The small island of Ordel is situated close to the southern part of Coco-nut Point, in the entrance of the strait formed between it and the Dammer Islands, which is too narrow for ships.

* This danger appears to have been seen by the French ships Resolution and La Subtile, in 1786, as it is marked on a M.S. chart of their track between Oby Major and the Dammer Islands.

Point Tabo.

Tabo, Jabo, or Patani Point, the eastern extremity of Gillolo, has a gradual slope, ending in a bluff to seaward; and when bearing N. W. by N., some white cliffs are seen near it. The land hereabout is high, and over the point rises a hill like a quoin, with its thick end to the westward. PULO MOAR is low, flat, and woody, stretching out 1 or 1½ miles from Point Tabo, connected with it by rocks and breakers; close to the east end of Pulo Moar there is a small islet, in lat. 0° 9′ N., lon. 128° 58′ E. by chronometers, which forms the western boundary of the passage between it and Geby.

Pulo Moar.

Eastern coast of Gillolo.

The eastern coast of Gillolo is well inhabited in many places, with small villages fronting the sea adjacent to Point Tabo, and at other parts of the coast. Between the extensive peninsula that forms Point Tabo and the other peninsula that stretches north-eastward, and forms the N. E. extremity of Gillolo, the Great Bay of Ossa is situated; this bay has in it several islands and shoals, with moderate depths and regular soundings amongst and inside of them.

Ossa; islands and coast adjacent.

Ossa Village, in lat. 0° 45′ N., lon. 128° 22′ E. by chronometer, situated on the south side of the bay, abounds with nutmegs, and has a fine watering place; here, ships may procure water and refreshments, and plenty of timber for spars on Pulo Orr, an island about 3 miles N. N. E. of the village. The anchorage in the road is in 12 to 14 fathoms, good holding ground, betwixt the island and the village of Ossa. About 2 leagues nearly East from Pulo Orr lies Pulo Otto, on either side of which there is a channel, from 2 to 3 miles wide, leading from the road to the eastward: the depths are from 20 to 30 fathoms betwixt Pulo Otto and some shoals to the north-westward, which bound the channel on that side, and from 17 to 20 fathoms in the south channel, betwixt it and Pulo England. This is a considerable island, uninhabited, and separated from Gillolo by a narrow passage, having good anchorage in it of 8 or 9 fathoms, and abounding with fish. These islands have reefs projecting from them, and there are several other islands and shoals, 2 or 3 leagues northward and north-westward from Pulo Orr; one of them, a sandy isle, 8 or 9 feet above water, is about 3 or 4 miles N. by W. from it. About 2 miles West from Ossa Village lies Ayer Watchey River and Village, where fresh water may be got about a mile up the river. Golonasy Village, about 4 miles to the north-westward of the latter, was destroyed by the Dutch, January 25th, 1808.

Ayer Watchey.

Maba Village and adjacent coast.

Maba Village, in about lat. 0° 53′ N., distant 6 leagues W. N. Westward of Ossa, lies near the head of the bay, where there is a river navigable by boats, and good fresh water. Maba Island, near the shore, northward of the river, has a few houses on it, and anchorage about 1½ or 2 miles to the eastward, in 10 to 12 fathoms water. Betwixt this place and Ossa, and from thence to Pulo Otto, tolerably regular soundings extend along the coast, to the distance of 5 or 6 miles off shore; but a good look-out is requisite, to avoid the shoals contiguous to the coast, and others that are scattered in the offing.

A ship proceeding to any of these places for water or refreshments ought to keep a boat sounding ahead. Captain William Greig visited Ossa and the adjacent parts, in the Minto, from Bengal, and constructed a plan of the south side of the bay; from his statement this description is taken.

Shanpee Islands.

SHANPEE ISLANDS, bearing nearly North from Point Tabo, consist of a group, three or four in number, extending 3 or 4 leagues North and South, the body of them being in about lat. 0° 30′ N. They are mostly level, of considerable size, with a small elevation between the central part and the northernmost island.

Catherine Islands.

THE CATHERINE ISLANDS,* in lat. 0° 39′ N., lon. 129° 11′ E. by chronometers, bearing N. N. E. ½ E. from Pulo Moar, distant 11 leagues, are three small low islands near each other, forming the western boundary of the north entrance of the Gillolo Passage. The northernmost resembles a rabbit, the central one is in the form of a sugar-loaf, and the southernmost and largest island is of flat appearance. They are distant 6 or 6½ leagues to the E. N. E. of the Shanpee Islands, and have soundings near some of them. There is a rocky islet N. Westward of the Catherine Islands, in lat. 0° 45′ N., lon. 129° 8′ E., seen in January, 1808, by the Ardassier; and another round islet or rock, apparently half or three-quarters of a mile in circuit, having some small shrubs on it in different places, lies about 10 miles S. W. by W. from the Catherine Islands. Rocky islet.

Canton Packet Shoal.

THE CANTON PACKET SHOAL, discovered by Captain King, in the American ship Canton Packet, returning from China in 1818, is thought to be dangerous; it is thus described by him.

July 26th, at 6 P.M., saw the Catherine Islands bearing S. E. by S. 3 or 4 leagues, and the wind being far to the eastward, we stood to the westward of these islands. At 4 A.M. tacked to N. E., and at daylight the east point of Gillolo bore S. by W., Shanpee Islands S. W. 9 or 10 miles, and Catherine Islands N. E. by E. At 8½ A.M. discovered breakers on our lee quarter, with discoloured water half or three-quarters of a mile to the eastward; tacked to southward, but finding we could not clear the shoal, as the current set strong to the northward, tacked again to N. Eastward. Saw the bottom, apparently white sand and black rocks, and had soundings from 9 to 14 fathoms: the place where the sea broke appeared to be a rock near the surface, with only from 4 to 6 feet water on it, when we approached it within 1¼ miles. When we had the above soundings on the shoal, the S. E. point of Gillolo bore S. by W., Catherine Islands E. N. E., and the body of Shanpee Islands S. W. This shoal appears to lie nearly in mid-channel between Shanpee and Catherine Islands, and in lat. 0° 35′ N., lon. 128° 55′ E. On the following noon we observed in lat. 0° 40′ N., lon. 129° 5′ E., the S. E. point of Gillolo bearing S. S. W., Catherine Islands E. ¼ N., and the small round islet that lies about 10 miles S. W. by W. of Catherine Islands bore S. ¼ W.

Aurora Bank.

AURORA BANK, described as follows by Captain George Vint, of the ship Aurora, was discovered by him December 25th, 1816. At 8 A.M., steering eastward with a light northerly air, saw rocks alongside; immediately tacked, and had 8 fathoms water in stays; steered N.W., deepening gradually to 45 fathoms, then 120 fathoms no ground. When upon the bank, observations taken placed it in lat. 0° 40′ N., lon. 129° 30′ E., and the northernmost of Catherine Islands was seen from the top-mast head bearing W. ½ S., distant about 5 or 6 leagues. This bank must be of small extent, as the Wexford and Elphinstone were about 1 and 1½ miles westward of the Aurora when she was upon it, and neither of the former ships had soundings. Although 8 fathoms was the least water found on this bank by the Aurora, yet a whaler which she fell in with a few days afterwards stated, that on some parts of it there are only 5 feet water; which, if correct, must render the Gillolo Passage not so safe in squally weather as hitherto supposed.

* Captain Pope, in the Minerva, got close to these islands at midnight, January 29th, 1808, and named them Catherine Islands. Captain Tate, in the Cumbrian, got also close to them in the night of August 26th, 1809, returning from China, and thought them a new discovery.

When the northernmost Catherine Island bore N. by W., distant 3 miles, at 6 P. M., had ground 58 fathoms, and shoaled regularly to 26 fathoms when not more than a mile from it; having been drifted in a calm towards the central small island, she anchored at 9 P. M. in 20 fathoms, on a bottom of sand and shells, and found the current or tide running three miles per hour to the S. W., and afterwards it set West about $1\frac{1}{2}$ miles per hour.

Geby

GEBY, extending about $6\frac{1}{2}$ leagues N. W. and S. E., is narrow and hilly, resembling several islands when viewed from the westward at 7 leagues distance; the northern part is rather low, but the south end is high, and terminates in a bluff point. The N. W. end of the island is in lat. 0° 2′ N., lon. 129° 19′ E. by mean of several ships' chronometers, nearly agreeing; but the True Briton's and Lieutenant M'Cluer's observations place that end of the island exactly on the equator;* it bears from Pulo Moar nearly E. by S. $\frac{1}{2}$ S., distant 7 leagues, this being the narrowest part of the Gillolo Passage, about 6 or $6\frac{1}{2}$ leagues wide.

Fow Island, and the harbour.

FOW, or FAUX ISLAND, in about lat. 0° 6′ S., has a peaked hill on its south part, and is separated from the western shore of Geby by a narrow channel, about a quarter of a mile wide, which forms a safe harbour, with depths from 10 to 15 fathoms. There is a passage into it, on either side of Fow Island, by keeping close to the latter; for a shoal lies nearly mid-way betwixt it and the Geby shore, in the west entrance, with good depths around. In the south entrance there are also two small shoals, close to each other, with 7 fathoms water between them, 7 or 8 fathoms inside, and from 20 to 10 fathoms betwixt them and the east side of Fow Island, which is the widest and best channel.

Anchoring bay and village.

In the small bay eastward of these shoals there is an anchorage in 15 to 20 fathoms near the shore of Geby; Ketchepee, the principal village, being about 2 miles distant, on the east side the island, with other villages near it to the southward. Soundings are not obtained until well in with the shore.

The William Money, December 25th, 1833, anchored with the stream in 24 fathoms, south extremity of Fow N. W. by W., and the S. E. extreme of Geby S. E.; here she received 20 butts of water, and sailed on the following day.

Basin.

On the N. E. side of Fow Island, a narrow gut, fronting Geby Harbour, stretches into the island close to the peaked hill, and forms an excellent port or basin, there being 4 and 5 fathoms water in the narrow entrance, and from 10 to 16 fathoms inside. The fresh water rivulet is upon the Geby shore, opposite the north point of Fow Island; and the rise and fall of tide is five feet on the springs. The island abounds with turtle and fish of various kinds; the natives were hospitable to Lieutenant M'Cluer, who touched here in 1794, and procured 1,000 nutmeg plants; they prefer white cloth to other articles, and speak the Malay and Tidore languages. Monsieur Bougainville, in 1772, also stopped at this place for refreshments, and surveyed the port. The N. E. side of Geby is steep to, without anchorage; and the Isles Jyoi and Outah, about a league northward of the east point, are small and low.

Refreshments.

Isles adjacent.

Gagy, and other islands.

GAGY, in about lat. 0° 25′ S., bearing nearly S. E. by E. from the S. E. end of Geby, distant 6 or 7 leagues, is an island of considerable extent, and moderately elevated, formed of uneven hummocks, having some small islets southward of it,

* The French surveying ships place it in lat. 0° 1′ N., lon. 129° 17′ E.

called Doif, and a large group, called Batangpally Islands, to the eastward, fronting the S.W. end of Waygiou. Between these and Gagy there is a passage, and the channel betwixt Gagy and Geby is very safe, having an islet in it near the south end of the latter. This channel is sometimes adopted by ships proceeding outward; and it may probably be chosen to advantage, by ships coming in towards Pitt Passage during the South-east Monsoon, being more to windward than the channel betwixt the west end of Geby and Gillolo.

SYANG, in lat. 0° 20′ N., lon. 129° 54′ E.,* by chronometer, bearing from the north-west end of Geby about N. E. by E. ½ E., distant 13 leagues, is a low, flat island, about 4 miles in extent, having soundings from 10 to 20 fathoms, sand and rocks, within 2 or 3 miles of its western side; farther in there are 6 or 7 fathoms, with fresh water at a rocky point, near the north-western extremity of the island, from whence a reef projects about three-quarters of a mile. Syang.

EYE ISLAND, in lat. 0° 23′ N., lon. 129° 53′ E., and contiguous to the north end of Syang, is small and low, covered with trees, with soundings near it. This is the outermost island, bounding the eastern side of the north entrance of the Gillolo Passage; it bears E. 21° S., distant 15 leagues from the Catherine Islands, which bound it to the westward. Eye Island.

The Streatham, January 12th, 1820, in passing Eye Island, saw breakers about 1½ miles off the N.W. point. Captain White, of the Sherburne, in passing near the north end of the island, remarks in his journal, that a reef projects about three-quarters of a mile from its northern extremity.

WYANG, distant about 4 leagues to the south-eastward from Syang, is the northernmost of a range of islands, stretching from it nearly to the N.W. end of Waygiou, of which Een, two in number, are the easternmost. Ruib, the largest and highest, in lat. 0° 2′ S., lies farthest to the southward towards Gagy, having Balabalak, a rocky islet, about a league to the westward, and many other small isles and rocks nearly all around, which contract the channel between Ruib and the N.W. part of Waygiou, called the French Passage; this has been navigated by the French exploring ships, and is about a league wide, but Ruib is 2 leagues distant from the N.W. end of that island. Wyang, and adjacent islands

Some of these islands are of considerable height; one of them has a table-land on it, and another of the westernmost of them is formed of several hummocks. The channels among them are considered safe, but are rather contracted between some of the islands; if the wide channel betwixt Geby and Syang is not adopted by ships passing to the eastward of the former island, they may proceed betwixt Syang and Wyang, which is the widest of the other channels. The French corvette Uranie, in passing between Ruib and the Wyang groups, December 13th, 1818, got upon a coral bank, with 6 fathoms on it, about 5 miles N.W. by N. from the north end of Ruib, and 3 miles South from the central Wyang Island. Channels.

ORMSBEE SHOAL, discovered by the American ship Asia, Captain J. H. Ormsbee, is thus described in her journal:—" August 6th, 1818, at noon, observed in Ormsbee Shoal.

* Captain White, in 1824, made this island in lat. 0° 24′ N., lon. 129° 56′ E., or 23° 3′ W. from Cape St. George, New Ireland, by chronometers. The French corvette Coquille, Mons. Duperry, in September, 1823, made it in lat. 0° 20′ N., lon. 129° 52′ E.

lat. 0° 48′ N., lon. 130° 8′ E. by chronometer. At $1\frac{1}{2}$ P.M., lon. 130° $1\frac{3}{4}$′ E., by observation of sun and moon, steering southerly with moderate breezes at S.W. by W. to W. S.W., was alarmed at $2\frac{1}{2}$ P.M. by the bottom been seen alongside; tacked immediately, and had 15 fathoms coral, then stood North and N. by W. in soundings of 15 to 20 fathoms, coral, till 4 P.M., at which time had 16 fathoms, next cast no ground 150 fathoms, Nameless Island, of Laurie and Whittle's chart, bearing S. by E. $\frac{1}{2}$ E; Wyang, an island full of hummocks, S. $\frac{1}{2}$ E.; and Syang, apparently a low, flat island, visible from the mizen-top. Although 15 fathoms was the least water we got on the bank, yet at a small distance from the ship the water appeared shoaler, but no breakers were visible, the sea being smooth. The current was setting to the northward about a mile per hour, by allowing for which, the north edge of the shoal is in lat. 0° 46′ N., and that part where we first had soundings in lat. 0° 42′ N., lon. 130° 4′ E. by chronometer, and 130° 2′ E. by observation of the sun and moon."

Directions for sailing through the Gillolo Passage, and thence into the ocean.

HAVING ENTERED THE GILLOLO PASSAGE, by Gasses Strait, or by the channel on the east side of Pulo Gasses, steer in the first case about N. N. E. $\frac{1}{2}$ E., and in the latter about N. by E., to pass through the channel between Point Tabo and Geby. Be careful in the night to give a berth to the Fairway Ledge, and to the Weeda Islands, but it is advisable to borrow on the west side of the passage when the winds are light, because the current sometimes sets north-eastward or eastward.

If the wind hang at N. N.W. so as to occasion delay in working to the westward of Geby, pass to leeward betwixt it and Gagy, then out into the ocean through any of the channels contiguous to Syang. But the western channel near Gillolo, and between the Catherine Islands and Syang, ought to be pursued if circumstances admit, in order to weather the Yowl and Asia Islands. This is rendered necessary on account of northerly winds generally prevailing when clear of the Gillolo Passage, with a southerly swell, and a current of from 12 to 20 miles daily setting south-eastward.

If any difficulty is experienced in passing to the westward of the Asia Islands, the channel betwixt them and the Yowl Islands may be followed, it being about $6\frac{1}{2}$ leagues wide and safe; or, in case of necessity, pass to the southward of the latter islands, betwixt them and the north coast of Waygiou.

When clear of the Gillolo Passage, endeavour to get into lat. 1° 30′ N. to 2° N. as soon as possible, which is considered the best track for getting to the eastward: a constant south-easterly or southerly current may be expected, while running to the eastward in these parallels, which requires attention to keep up the northing; but lat. 3° N. should not be exceeded, for farther northward the limit of the North-east Monsoon will be approached, where the north-westerly or northerly breezes often veer to the north-eastward.

The south-easterly current will probably change into an easterly one, and set to the northward of East, as the latitude is increased; about the parallel of the Pellew Islands, it may be expected to cease; and when the North-east Monsoon begins to blow steady, a westerly current will be experienced. In the early part of the season it may be prudent to pass to the eastward of the Pellew Islands; but late in January, February, and March, it will be sufficient to pass near them to the westward.

Waygiou, north coast.

WAYGIOU, called QUARIDO by the inhabitants, is mostly high uneven land; the north coast may be approached in most places, although several of the points and of the isles near the shore have reefs projecting from them, and a rocky shoal stretches a considerable way from the western part of the island. There are several harbours on

the north coast, well sheltered, where fresh water may be got, and although little known to British navigators, they have been visited and surveyed by French ships at different times, during their voyages of discovery and circumnavigation.

Piapis, the westernmost* of these harbours, in lat. 0° 5′ S., is about 2 miles East of Cape Forrest, the N.W. point of Waygiou, which headland is in lat. 0° 5′ S., lon. 130° 12′ E. Rocks, on which the sea generally breaks, project a quarter of a mile from the west point of the entrance of the harbour, in a W. N.W. direction; these are avoided by steering in about S. E., and keeping nearest to the west point, off which stands a haycock-shaped rock, about 15 feet high, with 10 fathoms, mud, close to. Piapis Harbour.

The entrance of this harbour is rather more than a quarter of a mile wide, having 30 and 20 fathoms water in it, decreasing towards the shores inside, where it separates into two branches. A ship may haul round the Haycock Rock, and anchor to the south-westward of it in 15 or 20 fathoms, mud, and fresh water may be got at a pool on the island inside, which has a hill on it. There are rocks betwixt this island and the western shore, with a passage of 8 fathoms close to the island, and 5 fathoms close to the shore, in a cove at the S.W. side, where a ship might be careened. At the bottom of the eastern branch of the harbour there is good timber for masts, and a small brook of water near two peaked hills; and there is a pool of fresh water on the small but high island Sipsipa, which forms the east point of the harbour's entrance. Nearly mid-way betwixt this place and Offak Harbour there is a small island, from its appearance called Shoe Island, near the shore of Waygiou, with several other isles adjacent to Arago Bay; the entrance of this bay is about 4 leagues East of Piapis Harbour, in lat. 0° 4′ S., and it is about $1\frac{1}{2}$ or 2 miles wide, and nearly of equal extent, containing several islets, but apparently not surveyed by the French ships when they gave it this name. Water.

Port Duperrey is formed on the west side, and Port D'Urville on the east side of a narrow peninsula that separates them, the north extremity of which, called Point Coquille, is in lat. 0° 3′ S., lon. 130° $36\frac{1}{4}$′ E. These two harbours are small, each rather more than a quarter of a mile in diameter, of circular form, with soundings from 10 to 20 fathoms, sand or coral, excepting near the shores, where the water is very shoal in some parts: both are open to northerly winds. Port Duperrey has a brook of fresh water at the south extremity, and several streams run into Port D'Urville. Port Duperrey, Port D'Urville, and Point Coquille.

Offak Harbour (the entrance), in lat. 0° $1\frac{1}{4}$′ S., lon. 130° 43′ E., about $9\frac{1}{2}$ leagues eastward of Piapis Harbour, is bounded by high land, and not easily discerned from the offing. On the east side the entrance stands a Sugar Loaf Hill, about 500 feet high, and inland a conical peak, called the Buffalo's Horn, which is in one with the Sugar Loaf bearing S. S.W. The entrance of the harbour is rather more than a quarter of a mile wide, with 20 and 30 fathoms water; the course in is South and S. by E., keeping nearest the western side, on account of some rocky islets, like haycocks, which lie near the eastern face of the entrance. The harbour inside the entrance, forming a great inland basin of deep water, stretches nearly 5 miles to the eastward and westward, and is from a quarter of a mile to one mile in breadth. The eastern side of the entrance is fronted by a group of islets, the outermost of which has a pool of fresh water on it, with a reef adjacent, and some rocks to the north-westward. There are from 12 to 6 fathoms, mud, near some of these islets, and 20 to 26 fathoms about mid-way betwixt them and the east point of the harbour entrance. A little less than a quarter of a mile Offak Harbour.

* Rossel Bay, formed between Cape Forrest and Cape Dentrecasteaux, the western extremity of Waygiou, does not seem to have been explored by the French surveying ships; nor Beauprè Harbour, an inlet of the sea on the south side of the latter cape.

inside, and to the eastward of the south point of the eastern shore of the entrance, there is a small sandy cove, with 10 fathoms water in it, and a stream of fresh water running into the sea, where the French surveying ship Coquille, Mons. Duperrey, anchored in 1823, and erected an observatory on the shore.

Cape Freycinet, in lon. 130° 45½′ E., on the equator, about 3 or 4 miles E. N. E. from the entrance of Offak Harbour, and consisting of high land, is the northernmost part of Waygiou.

Rawak Harbour.

Rawak Harbour, distant from Offak Harbour about 4½ leagues to the eastward, is formed inside of Pulo Rawak, which is separated from the coast by a navigable channel about a quarter of a mile wide, having from 6 to 9 fathoms water. The eastern entrance is nearly half a mile wide, with depths of 15 to 17 fathoms, decreasing to 10 fathoms inside. A ship may be tolerably sheltered here, but it is open to the eastward and north-eastward; water can be procured from two streams on the Waygiou shore opposite, which is inhabited. The Uranie French corvette, Mons. Freycinet, December, 1818, anchored on the east side of Rawak, in 11 fathoms water, about a quarter of a mile to the southward of the east point of that island, and fixed the observatory on shore, close to a small lagoon, to the westward of the ship.

Pulo Manouaran.

Pulo Manouaran, distant about 2 miles from the coast, and 4 miles N.W. of Pulo Rawak, is of moderate height, with a pool of fresh water near the south point, and an islet close to its N.W. extremity. There are soundings to the eastward and westward of Manouaran, and a safe channel inside of it, with irregular depths from 10 to 20 fathoms. The entrance of Kabarei Bay is about 1 or 1½ miles to the south-eastward of Pulo Rawak, which bay is above a mile in extent, with depths of 11 and 12 fathoms in the entrance, to 6 and 5 fathoms inside, near the shore; there are at the S.W. part small islets, fronting a cove called Port Saouni by the French, having only 2 and 3 fathoms water, where small vessels might be land-locked near the village Saouni, but the entrance is very narrow between the small islets.

Boni Road.

Boni Harbour, in lat. 0° 1½′ S., lon. 131° 3′ E., distant 6 or 6½ miles eastward of Pulo Rawak, is formed on the east side by Boni Isle, and its fronting reef, which extends above a mile to the northward and eastward of that island; and by Cape Guerin, or Waygiou, to the westward. Here is a river, where boats can fill their casks with fresh water at all times of tide.* The French ships Recherche and Esperance, on their voyage in search of La Perouse, remained at this anchorage from the 16th to the 28th of August, 1793, to renovate the health of their scorbutic crews. They procured from the natives turtles brought from the Yowl Islands, hogs, fowls, rice, sago, coconuts, oranges, sugar-cane, pumpkins, &c. Other French navigators have touched here for refreshments, during their exploring voyages in the eastern seas. Chinese vessels sometimes touch here, and at other harbours among the Molucca Islands.

Coast to Point Pigot.

From Boni Island, the coast of Waygiou trends to the south-eastward, then round to South and S. S.W. towards Point Pigot; about 3 or 4 leagues northward of that point it is fronted by a reef extending out to a considerable distance, and which may probably be connected by detached patches with the Buccleugh Shoal now to be described.

Buccleugh Shoal.

THE BUCCLEUGH SHOAL, discovered by the Company's ship Duke of Buccleugh, August 24th, 1797, is described in her journal as follows:—"At 1½ P.M. saw coral rocks under the bottom, apparently 5 or 6 fathoms under water; up helm imme-

* Boni Village, on the N.W. part of the isle of this name, has a small lake near it, and there is a boat channel through the reef to the village. The French Observatory was placed on Waygiou shore, west side of the harbour, close to the river mentioned above.

diately, as the water appeared shoaler on the weather bow. When the lead was got ready, the reef or shoal was half a cable's length astern, had then 20 fathoms, sand and gravel, extremes of Waygiou bearing from N. 52° W. to Point Pigot S. 60° W., and the small island just open with the point, the nearest part of Waygiou, distant 12 or 13 miles; at this time lat. 0° 17′ S., from noon observation."

The shoal appeared 2 or 3 miles in extent, as the discoloured water over the rocks shewed from the mast-head; and although squally weather prevented a boat being sent to sound, yet no doubt on some parts of it there is very little water.

H.M.S. Hesper, Captain Campbell, got upon this shoal December 28th, 1815, after passing out of Dampier Strait. At daylight, when 4 or 5 miles East of Point Pigot, hauled up N.E.; but perceiving breakers at a considerable distance off the east end of the Island Waygiou, bore away to the eastward. At 9 A.M. hauled up again to north-eastward, at 10 observed the water discoloured, saw rocks under the bottom, and putting the helm up, cleared the shoalest part of a dangerous rocky bank, in passing over which had 7, 9, 6, $4\frac{3}{4}$, 5, and 14 fathoms, then no bottom, when the following bearings were immediately taken: the trees on the small island off Point Pigot W. 30° S., just visible with the eye, elevated 16 feet above the sea, Point Pigot W. $25\frac{1}{2}$° S., and the supposed eastern point of Waygiou W. $37\frac{1}{2}$ N. The shoal is about 11 or 12 miles distant from the nearest land, which is the east end of Waygiou, and although so far off, may probably be connected by detached patches with the breakers seen in the morning, and it may be the outermost of them. The rocks on the shoalest part of it did not appear to be more than 8 or 10 feet under water, when between the waves of the heavy swell then rolling over them, which on this part seemed almost ready to break.

This shoal is very dangerous, as ships generally haul up north-eastward after passing out of Dampier Strait, to avoid the risk of being set over on the coast of New Guinea, by the heavy swell and baffling northerly winds which sometimes prevail. But as the shoal bears E. 30° N., distant 12 miles from the island off Point Pigot, sink that island from the deck of a large ship, bearing to the westward of W. 30° S., when departing from Dampier Strait.

The Castlereagh, Captain Durant, January 26th, 1826, got upon the Buccleugh Shoal at $9\frac{3}{4}$ A.M.: rocks were seen under the bottom; immediately tacked to the eastward, Point Pigot bearing S. 62° W., island off it S. 59° W., northern extreme of Waygiou N. 55° W., open to the northward of a peaked hill near the sea: had $9\frac{1}{2}$, 7, and 13 fathoms in stays, when the above bearings were taken, and in a few minutes afterwards, steering E. by N., had no ground. The shoal appeared of great extent, and at least 12 miles off shore; sent a boat to sound on it, and $5\frac{1}{4}$ fathoms were found on the eastern verge, but she had not time to examine it properly.

The Castlereagh spoke a ship a few days afterwards, which had worked to the northward between the shoal and Waygiou shore, and found the channel safe, without any apparent danger.

THE YOWL, or AIOU ISLANDS, consist of a circular group of small low isles, about twenty in number, fortified by an extensive reef, which projects around them to a considerable distance, generally 2 or 3 miles, and it is steep to. The southernmost islands, extending nearly East and West about 5 leagues, are five in number; and the largest, called Aiou, or Baba, is about 3 miles long, having a considerable number of huts on its west end, and is the fourth island from the eastward. It lies in about lat. 0° 25′ N., lon. 131° 0′ E., or 18 miles West from Point Pigot by chronometer; Yowl Islands.

and the channel betwixt the coast of Waygoiu and the nearest part of the reef is about 8 leagues wide. The south-westernmost island of the group is detached a considerable distance from the others. The central and southernmost islands are uneven, and a little higher than the north-eastern ones, which are low and flat; several of them are inhabited, and they abound with excellent turtle. The north-western island is in lat. 0° 38′ N., lon. 131° 8′ E.; the north-eastern in lat. 0° 36′ N., lon. 131° 15′ E., or 2° 4′ E. from the Catherine Islands by chronometers; and the northern extremity of the reef that surrounds them is in lat. 0° 41′ N. Within 30 yards of the breakers the Lord North's boat had no ground 60 fathoms.

Asia Islands.

THE ASIA ISLANDS were first distinctly pointed out by the ship of this name, July 1st, 1805, in her passage from China to Bombay. January 12th, 1807, the Anna passed between them and the Yowl Islands; the Cumbrian, Bellona, and Perseverance,* have also passed through this channel at different times; it is 6½ leagues broad, and clear of danger. When passing near the northernmost of the Yowl Islands in the Anna, part of Waygiou was in sight, and the Asia Islands were just visible from the deck. They consist of three low, level islands, the south-westernmost of which is smallest, situated in lat. 1° 0′ N., and bears N. 3° E. from the north-eastern Yowl Island, distant 24 miles, or in lon. 131° 17′ E. by the Anna's chronometers: but the Asia made it 2 miles East of Point Pigot by chronometers, or in lon. 131° 20′ E.

The southernmost islands lie near each other; and the other, detached from them about 5 miles N. E. by N., has a reef above water projecting from its N. E. extreme about 1 or 2 miles eastward. This island is in lat. 1° 4′ N., lon. 131° 23′ E., or 5 miles East from Point Pigot by chronometers. The London, December 30th, 1824, observed at noon in lat. 0° 47′ N., lon. 131° 18′ E. by lunars, when the centre of the groups of the Asia and Yowl Islands were bearing N. by E. and S. by W. of each other, being in a transit line between them, and the easternmost of the latter was seen from the deck bearing South.

DAMPIER AND PITT STRAITS.

From Pitt Passage towards Dampier Strait.

SHIPS proceeding through Pitt Passage, and which do not go out by the Gillolo Passage, usually steer eastward for Dampier Strait, betwixt Pulo Popa and the Kanary Islands: this is the narrowest part of Pitt Passage, being about 8 or 9 leagues wide. The channel betwixt the Boo Islands and Pulo Popa, and on the north side the latter, is frequently adopted by ships bound to or from Dampier Strait in either monsoon, being considered equally safe as that southward of Pulo Popa.

Grosvenor Shoal.

THE GROSVENOR SHOAL, on which the Grosvenor anchored at 8 P.M., January 31st, 1763, is the only known danger in the Pitt Passage, but its situation was not then correctly ascertained; Pulo Popa bore from E. by N. ½ N. to N. E. ½ E.; the body of the island N. E. by E. ¾ E., distant about 5 leagues; and the Boo Islands from N. ¾ W. to N. W. by W., distant from the nearest about 3 leagues. Although she got on it in the night, the rocks were seen under the bottom; and after weighing, with the boats sounding ahead, the water deepened fast from 4½ to 10, 20, and 30 fathoms, then no ground.

* This ship passed these islands January 12th, 1807, the same day as the Anna, but not in company, and thought they were a new discovery. The Lord North, however, saw them July 19th, 1782, or three days after discovering the island bearing her name.

The Castlereagh, of Bombay, struck on this shoal. The following account of it was transmitted by Captain Durant, of that ship.

January 9th, 1817, at 11 P.M., saw the Boo Islands bearing N. E.; steered between East and E. N. E., kept the lead going, but got no soundings. At 3 A.M. the ship struck on a coral shoal, got out the long boat and cutter, carried out the stream anchor, and dropped it in 9 fathoms water about half a cable's length from the ship, and hove her off, then deepened immediately from 3½ to 9 and 16 fathoms, next cast no ground. When upon the shoal, found the current setting directly towards the Boo Islands 4 knots per hour; had no time to take *correct* bearings, but the shoal bears from the east end of the Boo Islands between S. ½ W. and S. ½ E., as the east end of those islands bore nearly North when we struck. At daylight Pulo Popa bore E. by S. and the Boo Islands N. W., distant 4 or 5 miles.

This danger was seen by Captain Wyllie, in the Dona Carmalita, September 20th, 1826, and the ship passed along its northern side, within a mile of the strong ripplings and breakers which were conspicuous on the edge of the shoal, the current then setting strong to the southward against a moderate breeze at S. S. E. When the extremes of the shoal bore from S. 50° E. to S. 38° W., and the nearest part South, distant one mile, the easternmost Boo Island bore from N. 22° E. to N. 2° W.; the southernmost island of Pulo Popa group N. 8° E., the trees on it just visible with the eye elevated 16 feet. By noon observation, the centre of the shoal was found to be in lat. 1° 17½ S., lon. 129° 28′ E., or 1° 56′ W. from Point Pigot by chronometers, and it bears from the southernmost of the Boo Islands S. 20° W., distant 12 or 13 miles. No soundings were got in passing the north side of the shoal within a mile; it appeared to extend 3 or 4 miles E. N. E. and W. S. W., and was 1½ or 2 miles in breadth, having probably from 3 to 6 feet water on the exterior ridge of rocks that surrounds a basin of deeper water inside; there seemed to be greater depth of water on the south side of the shoal, with openings, which might possibly admit a ship into the basin.

THE KANARY ISLANDS, bounding the south side of the passage in this part, are an extensive chain of flat, woody, uninhabited islands, stretching along the north coast of Mysole about E. by N., having a narrow passage betwixt some of them, and other isles which lie close to that coast. The Grand Kanary, in lat. 1° 44′ S., and about 5 or 6 leagues West from the meridian of the body of Pulo Popa, is of considerable size, and the largest of these islands. On its south side, about 4 miles from the east point, there is a pool of fresh water, with anchorage of 6 and 7 fathoms on the north side the point, between it and the two nearest islands. Captain Forrest, who touched at this place, named it Round Harbour; he found soundings near these islands, and channels betwixt some of them, with irregular depths from 9 to 25 fathoms. Kanary Islands, and adjacent small harbours.

MYSOLE is a large island, extending East and West about 14 leagues, and about half that breadth; the north side of it, fronting the Kanary Islands, is level land, of moderate height, and its coasts are lined almost all round by a range of small isles. The channel betwixt the east end of Mysole and the west point of New Guinea and Salawatty is 9 or 10 leagues wide, with several small islands in it, and soundings in the southern part. Mysole.

Captain Forrest visited Efbe Harbour, which is small, and formed by the Island Efbe, on the south coast of Mysole: here, he found the small village of Efbe, and was well received by its inhabitants; the lat. of this place is about 2° 12′ S. Efbe Harbour.

Pulo Popa.

PULO POPA is inhabited, and, including the contiguous isles, which surround its S. W. and West parts, extends about 5 or 6 leagues East and West; it is about 3 leagues in breadth. A semicircular hill, like a Bee-Hive, and another oblong hill, both near the N. W. end of the island, render it very conspicuous; the eastern part extending considerably in low, flat land. The N. E. point of the island is on a transit with the Bee-Hive bearing W. $\frac{1}{4}$ S., and the S. E. point is on a transit with it, bearing W. $\frac{1}{4}$ N. The S. E. point is in lat. 1° 12′ S., lon. 129° 52′ E., or 1° 26′ West from Point Pigot by chronometer, and the round hill is in lat. 1° 9′ S. The group of small isles off the S. W. part of Pulo Popa are sometimes called Tatas, and Calap is a considerable island near its west end. Deception Island, to the N. E. of Calap, and adjoining the N. W. part of Pulo Popa, appears like four separate islands, in passing along the north side of it, having four different points, each resembling an island, until they are closely approached. Close to, and among these isles which surround the western part of Pulo Popa, there are soundings, but none at 2 or 3 miles' distance. When Calap was opening between Deception Island and Pulo Popa, Captain Clarke, of the True Briton, in July, 1802, had from 30 to 17 and 15 fathoms water; then 25 fathoms, with the round hill on Pulo Popa bearing E. $\frac{1}{2}$ S., and Deception Island from E. by S. to S. W. $\frac{3}{4}$ W., distant off shore about a mile. She hauled off about $1\frac{1}{2}$ miles, and for a considerable time carried irregular soundings from 17 to 36 fathoms, shells and coral, then no ground 60 fathoms; when in $12\frac{1}{2}$ fathoms, the least water found there was a rippling. On opening the west end of Calap beyond Deception Island, bearing S. W. by S., the Boo Islands appeared W. by S., distant 6 or 7 leagues; and when the west end of Pulo Popa was opened beyond Deception Island, a sandy basin was seen on the north side the former, with shoal water, and a round bush upon a rock in the centre of the basin.

Contiguous isles.

Battanta Island. Cape Mabo.

BATTANTA ISLAND separates Dampier and Pitt straits from each other, and is about 45 miles in length East and West; Cape Mabo, its western extreme, is in lat. 0° 56′ S., lon. 130° 25′ E., or 53 miles West of Point Pigot by chronometer, bearing N. E. by E. $\frac{1}{2}$ E. from the S. E. end of Pulo Popa, distant about 13 leagues. Fisher Island is small, but high, and fronts the cape, bearing W. $\frac{1}{2}$ N. from it, about 2 miles' distance; these bound the west entrance of Dampier Strait on the south side, and a chain of low, flat islands bounds it to N. Westward.

Fisher Island.

Other isles.

Battanta Island, and also Salawatty, on the south side Pitt Strait, may be discerned in clear weather, after a ship has passed Pulo Popa on either side, both of these islands being high bold land.

Dampier Strait.

DAMPIER STRAIT, called GAMEN or GEMI by the Dutch, is formed by Battanta Island on the South, and Waygiou on the north side, being about 23 leagues in length from Cape Mabo to Point Pigot; but that part of the strait which has dangers in it, and which lies to the northward of Battanta, is only about 11 leagues in length, extending from Augusta Shoal to Mansfield Island. Gamen, is the largest of several islands on the north side the strait, and appears as part of the south coast of Waygiou, being separated from it only by a narrow channel, leading into a great basin, called Chabrol Bay by the French, which extends in a N. N. W. direction several miles across Waygiou, within $1\frac{1}{2}$ or 2 miles of the western arm of Offak Harbour, and within $2\frac{1}{4}$ miles of Ports Duperrey and D'Urville, nearly cutting through the island. On the western side of Chabrol Bay two other bays branch from it, and at its northern extremity is Port Blosseville, a safe harbour, with 4 and 5 fathoms water, in lat. 0° 5′ S., lon. 130° 40′ E.

KING WILLIAM ISLAND, to the southward of Gamen, and on the north side the strait, is high, with a white patch on its eastern extremity; it may be seen 12 or 13 leagues, and when first discerned in coming from the eastward, three hills on it appear like separate islands. Contiguous to the east end of King William Island is Hump Island, with a round rocky islet a small distance outside of it. Several small islets lie near the shore of Waygiou. King William, and other Islands.

AUGUSTA AND PIGEON ISLANDS are two small low islands, in lat. 0° 37′S., at a considerable distance to the southward of King William Island, and bound the north side of the *proper* passage: in landing on them, care is requisite to prevent boats being injured by the sharp rocks during the ebb tide. To the northward, betwixt these islands and King William Island, there is said to be several shoals, with intricate channels among them; and although a ship in a clear day might find a safe passage this way, by keeping a good look-out at the mast-head, it ought not to be attempted unless in a case of necessity. Neither ought the narrow passage betwixt Augusta and Pigeon Islands to be attempted; for although the Cornwallis and some other vessels have gone through it, there is considerable risk, as it is very narrow, and formed betwixt steep coral shoals. Augusta and Pigeon Islands. Contiguous shoals and channels.

Pigeon Island bears about E. by S. from Augusta Island, and at low water their shores are separated about half a mile: each is surrounded by a coral bank, which does not stretch out far to south-eastward, or northward of them; but a chain of coral patches appears to extend 3 miles from them in a S. Westerly direction, with others nearly 2 miles to the westward. On the south side Pigeon Island, the coral bank, with only 3 or 4 feet water on it, projects about half a cable's length, then the water deepens fast to 3, 5, and 10 fathoms. From the east end of this island, a reef and sand, partly above water, stretches out a quarter of a mile, deepening to 5 and 6 fathoms about 1 or 1½ miles from the island. Farther eastward, about 3 to 5 miles from Pigeon Island, there is a bank of coral and sand, about 3 miles in extent, with various depths, from 8 to 14 or 15 fathoms. This bank affords anchorage to ships stopping tide, or during the night, for there is thought to be no less than 6 or 7 fathoms water on it, and these depths are generally found on the west part, near the reef that projects from Pigeon Island. Bank of anchorage.

The narrow channel betwixt Augusta and Pigeon Island has 30 fathoms water in the middle of it, when in a direct line between them; and from 20 to 10 fathoms in the western part, about a mile from Augusta Island. The coral banks bounding it on each side appear to have 2½ or 3 fathoms water on them at low tide; consequently, there is depth sufficient for a small vessel. Sharp coral rock, lining the shores of these islands, makes wooding here inconvenient, and the landing is difficult; the tide ebbs and flows 11 or 12 feet perpendicular.

FOUL ISLAND, about 3 leagues E. S. Eastward of Pigeon Island, betwixt the east end of King William Island and the north shore of Battanta, but nearest to the latter, is small, and bounds the proper channel on the south side. This is the narrowest part of the strait, for Foul Island ought not to be approached under 3 miles, on account of the Vansittart Shoal. Foul Island.

MANSFIELD ISLAND, bearing nearly East from Foul Island, about 2½ or 3 leagues, is a white sand-bank, covered with a clump of tall trees, and situated on the south side the strait, upon the edge of Vansittart Shoal. There is another island, of Mansfield Island and others.

similar appearance, about a mile inside of Mansfield Island, with some others contiguous to the Battanta shore, scarcely discernible in passing.

Vansittart Shoal.

THE VANSITTART SHOAL resembles nearly in shape a right-angled triangle, stretching a great way out from the north side of Battanta; Foul Island being near the angular point, distant $2\frac{1}{2}$ or 2 miles from the N.W. extremity of the shoal; and two sand-banks, dry at low water, which lie on the western extremity, bear from Foul Island W. by S. $\frac{1}{4}$ S., distant about 4 miles. The north side of this extensive shoal takes an easterly direction from its N. Western angle, towards the east end of Battanta, having Mansfield Island on its northern edge; and being steep to all round, it ought not to be too closely approached. The True Briton's boat had from 40 fathoms near the western edge of the shoal, to 20 and 10 fathoms suddenly, then 4 feet upon it, with the two sand-banks bearing from S. E. $\frac{1}{2}$ S. to S. E. $\frac{1}{2}$ E., distant half a mile, Foul Island E. by N. about 2 or 3 miles, west extreme of Battanta S.W. by W. $\frac{1}{2}$ W., and the west end of Augusta Island N.W. by W. From hence, steering about E. by N. on the edge of the shoal, in $1\frac{1}{2}$ to 4 fathoms, she had at the distance of a cable's length, on the same course, 39 fathoms, one of the sand-banks bearing S. $\frac{1}{2}$ W., the other S.W. by W., Foul Island E. by N. $\frac{1}{4}$ N., west end of Battanta S.W. by W. $\frac{3}{4}$ W., the east end of Augusta and west end of Pigeon Islands in one, N.W. $\frac{1}{2}$ W. With Mansfield and Foul Islands in one, had suddenly from 37 to 4 fathoms, then 3 feet: with Foul Island bearing E. $\frac{1}{2}$ S., distant $1\frac{1}{2}$ or 2 miles, and Augusta Island W. N.W., she had from 21 fathoms suddenly to 3 and 2 feet on the edge of the shoal.

Fresh water river.

About 3 or $3\frac{1}{2}$ leagues S.W. from Foul Island, and near the S. Western extremity of Vansittart Shoal, there is a bay formed on the Battanta shore, with a fresh water river, bearing nearly South from Pigeon Island. Here, wood and water may be got; but as there are some habitations on the spot, boats should be on their guard, for these islands are inhabited partly by Papuas, from the coast of New Guinea, who are in a savage state. About a mile off the entrance of this river there are soundings from 20 to 30 fathoms, decreasing to 17 and 18 fathoms on a bank farther out, about 2 or $2\frac{1}{2}$ miles North from it.

There is a small bay about 4 miles westward of the fresh water river, having some islands in it covered with mangroves, where the landing is difficult: soundings, generally deep water, extend along the N. Western side of Battanta, to the distance of about 2 leagues from the shore.

Besides Vansittart Shoal, and those projecting from Augusta and Pigeon Islands, there appear to be several detached coral patches in Dampier Strait, only one or two of which are known to be dangerous, and they have generally deep water contiguous to them.

Augusta Shoal.

AUGUSTA SHOAL, bearing from Augusta Island W. by S., distant 2 leagues, is a small patch of coral, on which the Princess Augusta had 4 fathoms; but there seems to be several shoal spots, having too little water on them for large ships, which consequently ought to be avoided. The Buccleugh struck on one of them, August 26th, 1797, whilst in stays; the water being perceived discoloured, the helm was put down, and the ship immediately struck, but came round, then fell into 17 fathoms water. At this time Augusta Island bore E. by N. $\frac{1}{4}$ N., Pigeon Island E. by N., and the west point of Battanta about S. by W. $\frac{1}{4}$ W. The Woodford got into danger, at a greater distance westward of Augusta Island, September 1st, 1797: she struck and lost way for a few minutes, had 4 fathoms, rocks, by the lead; but as no discoloured water was

Other shoal patches.

seen ahead, she continued to stand S.W. with the wind at S. S. E., and having run about 2 cables' lengths, struck again, and had 6 fathoms, rocks, in the chains. The helm being then put down, the ship came round, stood East under a press of sail for about 10 or 15 minutes, and seeing the appearance of shoal water on the lee bow, tacked to S.W., and deepened gradually from 25 to 40 fathoms no ground. The attention of all on board having been directed to the safety of the ship, no bearings were taken until this time: Augusta Island then bore N. E. by E. $\frac{1}{2}$ E., distant about 6 leagues; Pigeon Island E.N.E., just in sight from the poop; body of King William's Island N.E. by E.; Fisher Island S. $\frac{1}{2}$ W. 5 or 6 leagues; Cape Mabo S. $\frac{1}{2}$ E., and the chain of low islands from N.W. by N. to W. $\frac{3}{4}$ S. Although, unfortunately, the true position of these rocky patches cannot be ascertained by this description taken from the Woodford's Journal, they *probably* bear about W. by S. or W. by S. $\frac{1}{2}$ S. from Augusta Island, distant 5 or 6 leagues. These dangers are avoided by keeping within 3 leagues of the N.W. side of Battanta, until Augusta and Pigeon Islands bear well to the northward. How to avoid the shoals.

OTHER SHOAL PATCHES extend from Augusta Island to the S. Westward, the outermost of which is about half a cable's length in extent, having $4\frac{3}{4}$ fathoms, coral rock, in the centre, deepening to 10 and 20 fathoms towards the edges. Foul Island bears from it E. by S. $\frac{1}{2}$ S., the east part of Pigeon Island N. E. by E. $\frac{1}{2}$ E., and the body of Augusta Island N. by E. $\frac{1}{2}$ E., distant $2\frac{1}{2}$ or 3 miles. Shoals near Augusta Island.

The soundings eastward of Pigeon Island deepen fast from thence towards the N.W. edge of Vansittart Shoal, and are very irregular, with deep holes in some parts. The Glatton anchored in 40 fathoms, rocky bottom, with Foul Island bearing S. E. 4 or 5 miles, Hump Island N. N. E., the west part of Battanta about W. by S., and in tending with her head to the northward, no ground could be obtained with 140 fathoms line. Soundings.

From the bank of anchorage eastward of Pigeon Island, the water deepens fast to the northward, towards the east end of King William Island, there being no ground 90 fathoms about a mile off it.

To the northward of King William Island there are dangerous shoals, some of them sand-banks even with the water's edge; and two considerable villages on the WAYGIOU SHORE adjacent are fronted by a coral shoal, steep to, rendering the approach to them unsafe. These villages lie N. N. Eastward of Hump Island, on the west side the mouth of a large strait, full of islands, which separates Gamen from Waygiou. The inhabitants of these villages sometimes come off in their canoes to ships passing, bringing with them coarse mats, bows and arrows, birds of paradise, with a few pumpkins, which they will exchange for white cloth; but they seem very poor, possessing no articles of consequence. Coast of Waygiou, and shoals adjacent.

The Waygiou shore, betwixt King William Island and Point Pigot, ought not to be too closely approached, as it is fronted by some shoals. The Grosvenor, February 9th, 1763, discerned shoal water, on which place the boat found 9 feet, rocks and sand, with no soundings at 60 fathoms close to it. After tacking, the body of the rocks were seen from the mast-head bearing N. E. $\frac{1}{2}$ N., distant about 3 miles; Waygiou bearing from E. by N. $\frac{1}{2}$ N. to W. $\frac{1}{2}$ S., about 3 leagues distant; a small island off Point Pigot E. by N.; the south end of King William Island W. by S. $\frac{1}{2}$ S.; and the east end of Battanta S. by W.

The Bombay, Captain A. Hamilton, in 1820, saw a dry sand-bank about 1 or $1\frac{1}{2}$ miles distant from the Waygiou shore, and when it bore N. $\frac{1}{2}$ W., Cape Spencer,

or Foul Point, bore S. ½ E., and the east point of Battanta S.W. ¼ S. This sand-bank is on a transit line, with a round knob, like an island, bearing N. by W. ¼ W., and it is in a transit line with the west end of the island off Point Pigot, bearing N. by E.

To sail from Pulo Popa towards Dampier Strait.

If you intend to proceed through Dampier Strait, haul up near the Boo Islands, and pass on the north side of Pulo Popa, if the wind incline at N.W., in order to lead round Fisher Island into the entrance of the strait, without losing time. If, however, night is approaching, it may be advisable to pass on the south side of Pulo Popa, and, after rounding its eastern extremity, haul up N. E. or N. E. by N. for Dampier Strait; because the current sets generally S. E. or southward, which makes the passage to the northward of Pulo Popa preferable, when circumstances are favourable; but care must be taken to give a berth to the chain of low islands situated N.W. and W. N.W. of Cape Mabo, about 8 leagues distant; for there may be dangers in their vicinity, exclusive of the shoal patches to the eastward, between them and Augusta Island. They are all avoided by borrowing towards the western shore of Battanta, which is bold, and it is also the safe side of the channel.

When Cape Mabo is brought to bear South, keep within 3 leagues of Battanta, and do not bring Pigeon Island to the eastward of E. N. E. or N. E. by E. ¾ E., by which means the Augusta Shoal and the other patches bordering the north side of the channel will be avoided; for they *seem* to extend in a direction about W. by S. or W. by S. ½ S. from Augusta Islands about 6 leagues, or nearly to the chain of low islands.

Having passed about 3 or 4 leagues to the N. E. of Fisher Island, soundings will be got along the shore of Battanta; they extend across to the north side of the channel in some places, and to Augusta and Pigeon Islands; but the soundings are generally irregular, from 70 to 35 fathoms, except where they decrease near to, or on the edge of some of the shoal patches contiguous to the north side of the channel. As the bottom is generally foul, it is prudent to use a light anchor, if obliged to stop tide; because several ships have been obliged to leave their anchors behind, on account of their hooking the rocks.

Passage through the strait.

When the west part of Battanta is approached, keep within 3 leagues of it in steering N. Eastward, with Augusta Island bearing about N. E. by E.; or if Mansfield Island is discernible, and kept on with the south end of Foul Island, you will pass clear to the southward of the shoal patches which border the north side of the channel. Having brought Augusta Island to bear N. by E., about 4 or 5 miles distant, haul more to the northward, to give a berth to the western part, and N.W. angle of Vansittart Shoal, by passing at a convenient distance of 2 or 3 miles on the south side Pigeon Island. Betwixt this island and Vansittart Shoal is the narrowest part of the strait, being 2½ or 3 leagues wide; and to avoid the edge of the shoal, which is steep to, Foul Island ought not to be approached under 4 miles' distance, when it bears between East and S. S. E. When this island is brought to bear S. by E. or South, there are no more soundings: and in steering eastward, keep well to the northward of a direct line joining Foul Island and Mansfield Island, for that line passes over the north part of Vansittart Shoal.

THE BANK OF SHOAL SOUNDINGS, from 6 or 7 to 12 or 14 fathoms, extending 4 or 5 miles eastward of Pigeon Island, is very convenient for anchoring upon occasionally to stop tide, or during the night; the bottom consists of sand and gravel in some places, and on its eastern extremity, where the water deepens, the ground becomes soft. South-eastward and southward of Pigeon Island are soundings of 12 to 15 fathoms, coral rock, on some patches; the bottom in general through-

out the strait is rocky, not affording good anchorage, except in a few parts where it is a little soft, or consisting of sand mixed with shell and coral.

Having passed through the narrow part of the strait, by keeping nearer to Pigeon Island than to Foul Island, when the former bears W. by S., steer a direct course about E. by N., or E. by N. ½ N., for Point Pigot. Several small islands will be discerned near the shore of Waygiou, and some inlets or bays, which ought not to be approached too close; for the shoal seen by the Grosvenor seems to lie at a considerable distance from that shore, and there may be others contiguous to the coast not yet explored. Point Pigot ought to be passed moderately close in going out of the strait, to prevent being driven close to the coast of New Guinea by the northerly swell that generally prevails outside; but care must be taken to give a berth to the Buccleugh Shoal. Point Pigot.

POINT PIGOT, the S. E. extremity of Waygiou, in lat. 0° 21′ S., lon. 131° 18′ E. by our chronometers from Batavia, and I made it the same by lunar observations,* is moderately elevated, having two little islands covered with trees fronting it at 1½ or 2 miles' distance to the southward, one of which is much larger than the other. The channel betwixt this point and the coast of New Guinea is about 8 leagues wide, and the three different routes by Dampier, Pitt, and Revenge Straits, here unite, leading out into the Pacific Ocean. Ships bound out take their departure from Point Pigot, and they endeavour to fall in with it when approaching these straits. The variation off it in 1793 was 1¼° easterly. Point Pigot. Variation.

THE TIDES in Dampier Strait, which rise from 10 to 12 feet perpendicularly on the springs, run frequently strong, but are very irregular. Towards the western entrance, betwixt Pulo Popa and Cape Mabo, there is frequently a current setting southward during the North-west Monsoon, from September to April, but subject to deviations, from winds or other secondary causes. In the same place there is generally a north-westerly or northerly current during the southerly or South-east Monsoon; although at times there is little or no current. Tides or currents in Dampier Strait, and in its vicinity.

At the eastern entrance of the strait, betwixt Point Pigot and New Guinea, there appears to be a tide running about 12 hours each way; but the ebb that sets out eastward is generally strongest in both monsoons, and has been experienced sometimes in the Southerly Monsoon to run out two or three days together, only slacking a little when the flood ought to set to the westward.

Although these easterly tides or currents are frequently found to set out betwixt Point Pigot and New Guinea, during the South-east Monsoon, this is not always the case; for strong N.W. currents sometimes sweep along the north coast of Waygiou, whereby several ships, in March and April, have been drifted between that coast and the Yowl Islands, when baffled by light airs. Others steering to fall in with Point Pigot, in July or August, have been carried to the northward of the Yowl Islands and Asia Islands by a strong N.W. current.

In the narrow part of Dampier Strait, bounded by Foul Island and Vansittart Shoal to the S. Eastward, and by the Augusta and Pigeon Islands to the N.Westward, the tides seem to be very irregular in both monsoons, and run with great velocity about

* This longitude of Point Pigot is probably within 1 or 2 miles of the truth, as Captain Torin, of the Coutts, Captain Seton, of the Helen, and Mr. Stone, of the Asia, all agree in making it in lon. 131° 18′ E. by chronometers; Mr. Brown, chief of the English Factory, Canton, made it in lon. 131° 19′ E. by chronometer from Canton, and Captain Williams made it in lon. 131° 17′ E. by the same means.

the full and change of moon. During the strength of the North-west Monsoon, in December, January, and February, the tide to the eastward generally prevails. In this season the ebb sometimes runs E. N. Eastward 6 or 8 hours together, or even longer, from 4 to 5 knots, when strongest in the springs: at other times it only runs 4 or 5 hours in that direction, from 1 to 3 knots during neap tides. The flood runs S. Westward seldom above 3 or 4 hours, and in this season it is generally weak.

In this part of the strait, during the strength of the Southerly Monsoon, from May to September, the flood sets through to the westward frequently 8 or 10 hours together. At first it runs about W. S.W., gradually increasing in strength, changing to S.W. or S.W. by S. when strongest; the greatest velocity being about 5 miles per hour, or rather more at times on high spring tides, and about 4 miles during the neaps. After running strong to S.W. for a few hours, it abates gradually in strength until it changes and sets eastward from 3 to 5 hours, but seldom strong. The ebb tide setting through the narrow part of the strait betwixt E. N. E. and N. E. is seldom strong or of long continuance in this season, for it often runs only about one mile per hour, appearing as a slack between the returns of the strong S. Westerly tide, but at times the tide to the eastward has been experienced to run for an hour or two at the rate of 4 knots, even in this season, and both tides run strongest near the edges of the reefs. On the day of full moon in July, we found the tide begin to set S. Westward at 7 P.M.; it continued strong until midnight, the moon being then on the meridian; after midnight it gradually abated in strength, and at daylight there was no tide.

Pitt Strait.

PITT STRAIT, called SAGEWYN by the Dutch, is bounded on the north side by Battanta Island, and on the south side by the north coast of Salawatty and the group of small islands stretching from thence to the adjacent coast of New Guinea. The west entrance bears about E. by N. $\frac{1}{4}$ N. from the S. E. point of Pulo Popa, distant 18 or 19 leagues; and the length of the strait, from the west point of Salawatty until clear of the reef off the east point of Battanta, is about 13 or 14 leagues: the greatest breadth is about 7 or 8 miles, and the narrowest part only 4 or 5 miles from side to side.

The shore of Salawatty is mostly steep to, and except in some places, where rocks line the Battanta shore to the distance of nearly a quarter of a mile, it is also bold to approach. But the high land on each side subjects this strait to frequent calms, and the rapid tides in it being attended with strong eddies, ships are thereby rendered ungovernable, and sometimes they are drifted backwards and forwards through the strait or against its shores. The preference is, therefore, now justly given to Dampier Strait, where in the narrowest part there is anchorage; nor ought Pitt Strait to be adopted unless in a case of great necessity.

About 2 leagues eastward of Cape Mabo there is said to be a reef near the southern shore of Battanta. The Ponsbourne got water in a small bay farther eastward, where she anchored in 45 fathoms, dark sand, about half a mile off shore, the watering place in the bay then bearing N. 8° W.; west extreme of the bay W. 60° S., distant half a mile; east point of the bay E. 3° N., with the eastern extremity of the island shut in behind it; west end of Salawatty S. 35° E., and the westernmost of the isles outside of it S. 5° E.

Watering place on Battanta.

Inside this strait there is no anchorage on the Battanta side until near its eastern extremity, except too close to the shore for large ships; and a ledge of rocks projects out about a quarter of a mile in some places, with 16 or 20 fathoms close, the next cast upon it being from 6 to 8 feet.

ROGEWYN, or REGEWIN ISLAND, sometimes called Passage Island, lying near the southern shore in the western entrance of the strait, is small. There is a bank of soundings eastward of it, with anchorage near the Salawatty shore, where several ships have remained during the night. The Warwick, at anchor in 30 fathoms upon this bank, had Rogewyn Island bearing W. ½ S. about 6 or 7 miles, open with the point of Salawatty about a sail's breadth,* a considerable village to the eastward, and a fine fresh water river about three-quarters of a mile to the westward of the anchorage, with three small streams adjoining. Betwixt it and the village, 25 fathoms water are found about half a mile from the shore.

Rogewyn Island

Anchorage.

Fresh water.

The Lord Holland anchored farther eastward, in 58 fathoms, fine gravel and small shells, about a quarter of a mile off shore, and 2½ miles inside of the third point of Salawatty, counting from the east end of the strait: Jackson Island was then on with the eastern extreme of Salawatty bearing E. 4° N., extreme of New Guinea E. 20° N., and Battanta from N. 32° E. to West. The cutter, a little farther westward, got 40 fathoms, decreasing regularly to 8 or 7 fathoms close to the rocky shore; and the officer found a stream of good water, convenient for watering a ship. Farther eastward the Salawatty shore becomes steep. Jackson Island is of considerable height, at some views resembling a spoon, and lies near the N. E. point of Salawatty, at the entrance of the strait, in coming from the eastward. July 9th, 1813, the Volunteer anchored in 33 fathoms, east of Rogewyn Island, and carried a hawser to the trees to steady the ship, which was slipped at the turn of the tide, to prevent the ship from swinging on shore. The Volunteer also anchored, July 7th, in 27 fathoms, fine black sand, with Jackson or Lipel Island bearing N.W., distant three-quarters of a mile. Between the 4th and 5th points of Salawatty, counting from Jackson Island, there is a bay about 1½ miles deep, with soundings of 32 fathoms, within the line of the two heads which form it, and not less than 30 fathoms, sandy bottom, within half a mile of the bottom of the bay. Captain Waterman, of the Volunteer, while sounding this bay, saw several places like runs of fresh water on the shore, and although the tide was running 4 miles per hour outside, he perceived neither tide nor eddies within the heads of the bay; but the ship was carried close to the 5th point by the tide, and brought up about 20 feet clear of the rocks which project from that point.

There is a deep bay on the south side Battanta, near the east end of the strait, with an island in its entrance; and close to the east part of this island stands a rock with some bushes on it, where a ship might anchor occasionally, with the rock bearing about North, distant one mile. There seems to be a considerable passage eastward of the island, leading into the bay, which may probably form a good harbour, and there appears to be a town at the bottom of it. The Glatton anchored near this place in 38 fathoms, fine brown sand, north end of Jackson Island bearing E. by S. ¼ S., eastern extreme of Salawatty E. S. E. Easterly, west point of Rogewyn Island W. S.W., southernmost point of Battanta W. by S. ½ S., easternmost point of Battanta N. by E. ½ E., off Battanta shore 2 miles.

Anchorage near the east end of Battanta.

Betwixt the east end of Battanta and the first point westward there is a bay, filled with small islands; and a bank of soundings extends from thence about 3½ leagues eastward, with overfalls and generally rocky bottom, the water deepening fast on its southern part, but the north side of it is dangerous.

Bank of soundings in the eastern part of Pitt Strait.

* It is very desirable that seamen should discontinue the use of this and similar indefinite phrases, and substitute for them the more intelligible ones of "half-a-point open," or "five degrees open," which are at once both definite and intelligible. Ed.

Battanta Reef.

BATTANTA REEF, or ROCKY SHOAL, extending nearly 3 leagues East from the east end of Battanta, forms the northern side of the bank of soundings mentioned above, and it is composed of patches of rocks, having only 3 and 3½ fathoms on some of them. The Pigot, when aground on one of these patches, had Jackson Island bearing S. ¾ W., eastern extreme of Battanta West a little southerly, and its western extreme on with Salawatty S.W. by W., northern extreme of New Guinea East northerly, off Battanta about 2 leagues. The Glatton, in 6 fathoms, rocks, had Jackson Island bearing S. by E. ¾ E., Battanta from W. ¾ N., to S.W. ¾ W.; standing from hence N. E. by E. 1½ miles, deepened fast to 32 fathoms, Jackson Island then S. by E. ¼ E., Battanta from W. ¼ N. to S.W. ¾ W. The Thames, after discerning the rocks under her bottom, hauled off, and anchored in 17 fathoms, but swung into 10 fathoms, coral rock, the east point of Battanta bearing W. by N., Pitt Strait S.W. by W., and Jackson Island S. 6° E. The boats found the soundings very irregular, till they got, 6, 5, 4, and 3½ fathoms on the rocks, about a mile west from the ship, with 6 and 8 fathoms around them. The Buccleugh, in company with the Thames, anchored the same day, February 14th, 1797, in 15 fathoms, coral and sand, with Jackson Island bearing S. 15° E., and the east point of Battanta W. ¾ N., off shore about 4 miles; the boat found only 3 fathoms, coral rock, about ¾ mile N. by W. from the ship.

How to pass clear of it.

The bank of soundings, lining the south side of Battanta Reef, extends about 3 leagues nearly E. N. E. and W. S.W., or with Jackson Island bearing between S. E. and S. by W. Although ships may anchor occasionally on its southern part, in from 20 to 30 fathoms, to stop tide, they ought not to borrow over towards the dangerous spots on its northern side, nor bring the east point of Battanta to bear so far to the westward as W. by N., until they lose soundings on the eastern extremity of the bank. The tides being strong, and the bottom generally foul, render the anchorage on this bank disagreeable; particularly in the northerly monsoon, when a swell rolls in over it from north-eastward.

Pitt Strait, perplexing and dangerous.

Pitt Strait ought only to be adopted in a case of *particular* necessity. The Thames, in company with the fleet, consisting of six ships, bound from Europe to China, passed through Pitt Strait, February 14th, 1797: they entered in the evening with a light westerly breeze, followed by a calm in the night, and the tide having set almost in every direction during the night, some of the ships were drifted out of, and into the strait again before morning. About sun-rise the tide set rapidly to the eastward, with strong eddies, and at 8 A.M. it changed, and set with equal violence to the westward: some of the ships at this time were near the Salawatty shore, in the eastern entrance of the strait, and the swell and tide setting towards that shore, the Thames had great difficulty in clearing it, with three boats towing her head off shore, and a faint breeze from the eastward. The Walmer Castle, when close to the Thames, was taken by a strong eddy upon the bow, which set her directly on the Salawatty shore, where she had 3 fathoms on one side and 30 fathoms on the other. After being driven along the steep bank some time, breaking the boughs of the trees with her yards, she got clear without damage, with the assistance of a light air that came off the land, and the boats of the fleet towing.

Shortly after, the Canton and Taunton Castle were drifted about in Pitt Strait, February 23rd and 24th, 1797, sometimes from one end to the other. The Canton was at one time drifted within a cables' length of the Battanta shore, in 40 fathoms water; at another time, within two cables' lengths of the Salawatty shore, and had no ground

120 fathoms. After getting to the east end of the strait, they were drifted out of it again to the westward, then proceeded round to the west end of Battanta, and passed through Dampier Strait. Other ships have, at various times, been drifted about in Pitt Strait, by the strong eddies, and were in danger of getting on the rocks, and after considerable delay proceeded through Dampier Strait. The Volunteer entered Pitt Strait, bound to the westward, July 7th, 1813, and after being obliged to anchor twice, in dangerous situations, close to the Salawatty shore, where she lay during a squally dark night, and was driven backwards and forwards by the tides when under sail in the daytime, got clear out of the strait on the 9th; and Captain Waterman, of that ship, observes, "that nothing will ever induce him to go through Pitt Strait again." It, however, sometimes may happen, that a ship entering Pitt Strait with a steady breeze and the beginning of a favourable tide will get speedily through; but as these instances are rare, it should be avoided if possible.

If *obliged* to pursue the route through Pitt Strait, keep as nearly as possible in mid-channel, that the eddies may be less liable to drift you close to either shore: be not induced by any favourable shift of wind to approach the shore, but continue to make short tacks in the middle of the strait. When Jackson Island is seen, steer to pass to the northward of it, at not more than 4 or 5 miles' distance, to avoid the reef off the east end of Battanta; which having cleared, haul northward near to Point Pigot, because several ships, after passing out of these straits, have been embarrassed with the coast of New Guinea. Caution.

GALOWA STRAIT, formed betwixt the Island Salawatty and the coast of New Guinea, is generally called Revenge, or Watson Strait, because Commodore Watson, in the Revenge frigate, went through it in 1764. Lieutenant M'Cluer went through it with the Panther and Endeavour, when surveying the coast of New Guinea in 1790; but it is contracted in several parts by numerous small islands and shoals, and being out of the direct route of ships proceeding to or from the Pitt Passage, it is properly avoided by merchant ships. At the north part of it a chain of islands stretches from Jackson Island, the nearest to the N. E. part of Salawatty, across to Cape Spencer, the opposite point of land on New Guinea. There are soundings of various depths through this strait, and amongst the islands in its northern entrance, with anchorage in many places; but Jackson Island has deep water very near it on the north side, and there is said to be some shoals to the southward, with anchorage inside the island, near the Salawatty shore. Galowa Strait.

Cape Spencer, called Foul Point by the Dutch, is moderately elevated, and reefs project to the north-westward from it and the adjoining islands to the distance of $1\frac{1}{2}$ or 2 miles.

FROM DAMPIER STRAIT TOWARDS CHINA, WITH THE COASTS, ISLANDS, AND DANGERS NEAR THE PASSAGE.

Caution sailing from Dampier Strait.

SHIPS proceeding out of Dampier Strait into the Pacific Ocean in December and January, when northerly winds are likely to blow in sudden squalls outside, with a heavy swell rolling in upon the coast of New Guinea, ought to pass near to Point Pigot, within 2 or 3 miles of the small islands that front it; then haul up north-eastward if the wind admit, to avoid the coast of New Guinea; but the small island off Point Pigot, or that point itself, must be kept to the westward of W. 30° S. until it or the point is sunk from the deck of a large ship, in order to give a berth to the Buccleugh Shoal.

January 4th, 1806, the Mangles, in going out of the strait, passed Point Pigot at 5 leagues' distance, then encountered severe squalls from the north-westward, with torrents of rain and intervening calms. The sudden heavy gusts of wind not permitting them to carry sail sufficient to keep the ship close to the wind, she was driven by the heavy swell on the beam, within a few miles of high breakers on the coast of New Guinea.

Finding they could not clear the coast on either tack, and the ship drifting at the rate of one mile per hour towards the breakers, the anchors were prepared to let go, although not in soundings. Fortunately at 5 P.M., January 6th, a steady breeze came at W. N.W., with which a press of sail was carried, steering N. E. by N. during the night; notwithstanding which, it was perceived in the morning that they had weathered the islands of Middleburgh and Amsterdam, not more than 5 or 6 miles.

The Lord North was from the 12th to the 17th of December, 1781, from Point Pigot until she got clear of the coast of New Guinea, being baffled with northerly winds, much rain, and a heavy swell from N. N. Eastward.

North coast of New Guinea.

THE COAST OF NEW GUINEA, from Cape Spencer, its N.W. point, stretches about E. N. E. towards Cape Good Hope, its north point, having several small bays and villages of the native Papuas between them. The north coast of New Guinea is generally high, but in some places low land fronts the sea: a little way inland, a chain of mountains extends parallel to the coast, which is covered with trees, and elevated, in some places, from 4,000 to 5,000 feet above the level of the sea.

Threshold Point.

Threshold Point, about 6 leagues eastward of Cape Spencer, has a deep bay on the east side filled with reefs, which surround a small island, and there is low land at the bottom of the bay;* the coast betwixt these headlands being lined by steep rocky shoals, ought not to be approached.

From Threshold Bay eastward, there are soundings from 20 to 60 fathoms in many

* The Dutch charts of the Geelvink's voyage place anchorage to the eastward of the shoals in this bay, opposite High Point, where there is fresh water.

places within 1 or 2 miles of the shore; but in some parts, reefs project to the distance of 2 or 3 miles.

Brebes Point, or Cape Wilson, in about lat. 0° 29′ S., and 5 leagues to the southwestward of Middleburgh Island, has a small bay on the east side, with from 10 to 30 fathoms water, and reefs on each side the entrance. Betwixt the reef which surrounds Cape Wilson and another reef about a league off shore, there appear to be 12 and 13 fathoms water, with 30 or 40 fathoms close to the outer reefs. From hence, nearly to Middleburgh Island, the coast is steep, having from 60 to 80 fathoms water near the shore. Brebes Point, or Cape Wilson.

Amsterdam and Middleburgh are two low, flat islands, surrounded by a reef, and bearing N.W. and S. E. from each other, distant about a mile. Amsterdam, the outermost, is in lat. 0° 19½′ S., lon. 132° 15′ E. by chronometer from Point Pigot, bearing nearly West from Cape Good Hope, distant about 5 leagues, and from the coast abreast about 2 or 2½ leagues. The reef projecting from this island is steep to, having 50 fathoms water near, and 4 or 5 feet upon it in some places. The Geelvink found soundings of 8 and 10 fathoms betwixt the shore and Middleburgh Island, with anchorage to the S. S.W.; and to the eastward betwixt it and Cape Good Hope, soundings of 15 to 40 fathoms, sandy bottom, extend about 3 or 4 miles from the coast, where a ship might anchor in a case of necessity. Amsterdam and Middleburgh Islands.

Cape Good Hope, in lat. 0° 20′ S., lon. 132° 31′ E.,* or 1° 13′ E. from Point Pigot by chronometer, is a low rugged point, of whitish appearance; and nearly East from it 4 or 5 leagues lies Tuft Point, sometimes mistaken for the former. This is the northernmost part of the coast of New Guinea, and there are soundings near it; but farther eastward it is steep to in most places. In the bay, on the east side of Tuft Point, there are some shoals; and a shoal lies about 13 leagues eastward, in a bay to the westward of Bee-Hive Mount, which is near the sea, and resembles a bee-hive or hay-stack. Cape Good Hope.

Geelvink Bay, about 3½ leagues eastward of the Bee-Hive, has rocks on each side the entrance, with a small islet on the west side, surrounded by a reef. There are 20 and 25 fathoms water in this bay, where the Geelvink anchored in 1705, and procured wood and water on the western shore: it stretches a considerable way inland, where it becomes very narrow, and terminates at a fresh water river; the land on the east side this bay is low contiguous to the sea. Geelvink Bay.

Flat Point, in about lat. 0° 46′ S., lon. 134° 25′ E., bearing from Cape Good Hope about E. 13° S., distant 39 leagues, forms the western extremity of the great bay on the north side of New Guinea, which extending inland about 60 leagues, nearly to the south coast, with M‘Cluer Inlet stretching from the west coast nearly to the western side of this great bay, almost cuts the large island of New Guinea into three islands. About 5 miles inside Flat Point is Dory Harbour, having two islands in the offing, and a bank of coral rocks fronting the entrance, with the high mountains of Arfak inland to the westward. In the great bay there are many islands and shoals, with soundings in general near its shores, which are intersected by other bays, in several places. The Geelvink circumnavigated this spacious bay, and watered at its southern extremity. Flat Point. Great Bay.

MYSORY, or SCHOUTEN ISLAND, bounding the entrance of the Great Bay on the east side, is high, and about 20 leagues in extent W. N. W. and E. S. E.; its Mysory and other islands.

* Captain White, in 1824, made it in lat. 0° 15′ S., lon. 132° 36′ E., or 20° 24′ W. of Cape St. George, New Ireland, by chronometers.

northern extremity is in lat. 0° 37′ S., and its western part is distant about 20 leagues, nearly East from Flat Point. Long Island lies between them, a little inside the entrance of the bay; and the Traitor Islands, a large range, projecting from the S. E. point of Mysory, the innermost of which are surrounded by a reef.

There is a FIVE FATHOMS BANK north of Mysory, extending about 3½ miles upon the equator; with the Island Mysory just in sight from the deck bearing South. Captain Eastwick had soundings 5 fathoms least water on this bank, and made its extent as stated above.

Jobie.

JOBIE is a high island of great extent East and West, with other islands contiguous; these front Mysory and the Traitor Islands to the southward, and there is a wide channel between them.

Captain Bristow touched at Jobie, in a southern whaler, some years ago, and he lay about 14 days, and put a streak of new copper on his ship; during his stay he, for mere trifles, procured some poultry, plenty of yams, and all sorts of tropical fruits. Nevertheless, it is prudent for every ship which may have occasion to stop at any part of the circuitous coasts of New Guinea to be constantly guarded against the perfidy of the natives, who are in a state of savage ignorance.

Supplies.

There is a passage leading into the great bay, called the South Passage, betwixt the east end of Jobie and Geelvink Point opposite on New Guinea: a reef projects from Geelvink Point, but inside of it there is good anchorage, and regular soundings extend from thence along the whole of the eastern side of this remarkable bay.

About 24 leagues E. N. E. of Mysory, in lat. 0° 21′ S., lie two small isles, which Captain Carteret, when he saw them in 1767, named STEPHEN ISLANDS.

Stephen Islands.

Providence Islands.

PROVIDENCE ISLANDS, two in number, north-westward of Mysory, and fronting the north entrance of the great bay, have a channel about 4 or 5 leagues wide between them, through which Dampier passed twice. The south-easternmost, called Great Providence Island, is the larger; the other being a low sandy isle, covered with trees, and surrounded by rocks.

This, called Little Providence, or Danger Island, is in lat. 0° 11′ S., lon. 135° 12′ E.; a coral shoal projects from it southward about half a mile, and stretches to the north-westward in form of a half-moon, to the distance of 3 or 3½ leagues from the island. The Cornwallis got on the edge of this shoal, with the island bearing S. S. E., distant 1½ miles, and tacked when the rocks were seen alongside, but there seemed to be about 8 fathoms water. The form and extent of the shoal were clearly discerned from the mast-head; the sea broke on the middle of the shoal, and on its northern extremity, the water appeared like a confused strong rippling. The north-western extremity of this shoal is in lat. 0° 1′ S., lon. 135° 8½′ E.; and to avoid it, ships coming from eastward should keep in lat. 0° 10′ to 0° 20′ N.

Cornwallis Shoal.

These islands are rather out of the track of ships proceeding to or coming from China by the eastern passage; but the islands and dangers *now to be described* lie near the common route, and are frequently seen.

St. David Islands.

ST. DAVID, or FREEWILL ISLANDS (the centre), in lat. 0° 55′ N., lon., by mean of nine ships' chronometers and lunars, nearly corresponding, 134° 21½′ E., form a close group, four in number, North, South, East, and West Islands, with an islet between North and East Islands. They were seen by the Warwick in 1761, by the Swallow in 1769, and recently by several ships. South Island is 3 or 4 miles in

length, but narrow, and lying in an East and West direction; they all appear as one island in some views. They have a level appearance, are covered with tall coco-nut-trees, may be seen about 5 leagues from the deck, and, although small, are well inhabited. These people seem to subsist chiefly on fish and coco-nuts, and will come off in their canoes to ships that lie to near the islands. The Mangles, January 8th, 1806, passed within half a mile of the reef, on the east side of them, and found it encircled the group, projecting about a mile from the north and south extremes, but not so far to the eastward and westward; on the east side of South Island it projects only about a cable's length, and has no soundings close to. The whole extent of this group is from lat. 0° 49′ N. to lat. 1° 2′ N., and from lon. 134° 17′ to 134° 30′ E.

Captain Tate, of the Cumbrian, made the body of the group in lat. 0° 55′ N., lon. 134° 21½′ E., corresponding with the mean of nine ships' observations, and he made the eastern island 3° 10′ E. from the north-eastern Yowl Island by chronometer.

Helen Shoal.

HELEN SHOAL (the body or south part,) in lat. 2° 50′ N., lon. 131° 40¾ E., or 22¾ miles East of Point Pigot by chronometers, as determined by Captain Seton of the Helen, April 5th, 1794, is probably the shoal seen by Captain Carteret, of H.M.S. Swallow, in 1767. From the Asia Islands, its southern extremity bears N. by E., distant 36 leagues.

The Ganges and Canada, in company, at midnight, September 10th, 1802, got close to the west side of this shoal; and must have inevitably got upon it, had not the moon shone brightly at the time. In wearing round, the Ganges was within twice her length of the breakers, and the Canada nearly tailed upon them. They stood off until daylight, then tacked to southward with the wind at W. S. W.; but finding at 9 A.M. that they could not weather the S. W. extreme of the shoal, they bore away along its western side to the north-eastward, and found it extended about 15 miles nearly N. E. and S. W., and 1 or 2 miles in breadth. It is broadest at the southern part, where it stretches about East and E. N. E. to a considerable distance, then turning more northward, forms a curve, with the concave side to the north-westward, and appears to be steep to. The sea generally breaks high upon the dangerous shoal; it consists of rocks under and above water, none of them elevated more than 4 or 5 feet from the surface. About 4 miles from the northern extremity there was a dry sand-bank, with the appearance of a wreck upon it, when these ships passed, and many pieces of drift wood on the shoal, resembling black rocks. This shoal was also seen by Captain Hanson, of the Swedish Company's ship Wasa, on his passage to China in 1804, who made it in lat. 2° 50′ N., lon. 131° 40′ E. by chronometers.*

Lord North Island.

LORD NORTH ISLAND is in lat. 3° 2¾′ N., lon. 131° 20′ E. by mean of six ships' lunar observations; but Captain Seton made it 13¾ miles West from Point Pigot by chronometer, which would place it in lon. 131° 4¼′ E.: until it was seen by the ship Lord North, July 14th, 1782, it seems not to have been known, but it was afterwards observed by the Raymond, Asia, and Montrose, January 1st, 1789; by Captain Seton, of the Helen, in April, 1794; and it has since been noticed by several other ships. It is small, low, and woody, about 1 or 1½ miles in extent E. S. E. and W. N. W., and seems to have a reef projecting from the east end, but is otherwise

* The Ganges and Canada made the northern extremity of the shoal in lat. 3° 0′ N., lon. 131° 28½′ E. by sun and moon; the Dorsetshire, February 5th, 1812, saw this shoal, and made it in lat. 2° 53′ N., lon. 131° 52′ E. by lunar observation; the mean of these would give lon. 131° 40¾′ E. for the situation of the shoal, agreeing with Captain Seton's chronometers from Point Pigot.

apparently safe to approach, and may be seen 4 or $4\frac{1}{2}$ leagues from the deck of a large ship: there is a remarkable tree on the centre of the island, which is first discernible, and makes like a sail. This small island is inhabited, and the natives have canoes, carrying six or eight men, which will sometimes come off to ships passing near.

The Helen's chronometer made it bear W. 15 N., distant 13 leagues from the southern extremity of Helen Shoal, and it appears to bear about West from the north end of that shoal. This ship's longitude of the island, 131° $4\frac{1}{4}'$ E., is probably nearest the truth; the Dorsetshire, in 1812, made it in lat. 3° 2′ N., lon. 131° 10′ E. by lunar observations.

Meriere. MERIERE, or MARIERE, is in lat. 4° $19\frac{1}{2}'$ N., lon. 132° $28\frac{1}{4}'$ E. by mean of ten ships' observations and chronometers, which is probably near the truth, as the Asia's chronometers, in 1805, made it also in lon. 132° 28′ E., measured from Canton; and seventeen days after, she made Point Pigot in lon. 131° 18′ E., or 70 miles West of Meriere by two chronometers agreeing with each other. It was discovered, in 1710, by the Spaniards, is about $1\frac{1}{2}$ or 2 miles in extent North and South, and three-quarters of a mile or a mile in breadth; it is rather higher in the central and southern parts than at the north end, where there are many coco-nut trees. It may be discerned about 4 or $4\frac{1}{2}$ leagues from the deck, seems to be clear of danger, and has been frequently seen by English ships, on their route to or from China by the eastern passage. The inhabitants seem to subsist chiefly on fish, and they sometimes come off to ships in their canoes, but have nothing to barter except fishing-lines.

Current Island. CURRENT ISLAND, or PULO ANNA, in lat. 4° $38\frac{1}{2}'$ N., lon. 132° $3\frac{1}{2}'$ E. by mean of ten ships' observations and chronometers, bearing from Meriere N. 52° W., distant $10\frac{1}{2}$ leagues, appears to be only about half a mile in extent, covered with trees; and although very small and low, it is inhabited. It may be seen about 4 leagues from the deck, and a reef is said to project about a mile from its north and south extremities. This small isle was seen by the Carnarvon, Warwick, and Princess Augusta, returning from China in 1761; and it is now frequently seen by British ships.

St. Andrew Islands. THE ST. ANDREW ISLANDS, in lat. 5° 20′ N., lon. 132° 16′ E. by mean of eight ships' chronometers and observations, or 13 miles East of Current Island by the Asia's chronometers, are two in number, bearing from Current Island N. 16° E., distant $14\frac{1}{2}$ leagues;* they are small, low, and level, covered with trees, and may be discerned about 4 or $4\frac{1}{2}$ leagues from the deck. The southernmost, called Codocopuei, is much larger than the other, which is about $1\frac{1}{2}$ or 2 miles N. N. Eastward, and called Sonrol. They seem to be connected, and surrounded by a reef, which is said to project only to a small distance, and is steep to.

Pellew Islands. THE PELLEW, PEELOO, or PALAOS ISLANDS, form a chain of islands, completely encircled by reefs, and extend nearly N. N. E., and S. S. W. about 29 leagues. The islands are not more than 5 leagues wide in any part, but including the great reef that fronts the western side of the chain at the distance of 4 or 5 leagues, the extreme breadth in the central part is about 10 leagues, converging greatly towards each extremity.

* These islands were discovered by the Spaniards in 1710; the Ponsborne saw them in 1769, and made their lat. 5° 22′ N. Lieutenant M'Cluer, who resided some years on the Pellew Islands, states that the inhabitants of St. Andrew Islands go from thence in their canoes to the former islands.

Baubelthouap, forming the north-eastern part of the chain, is much larger than any of the other islands, being about 8 leagues in length; and on its western side there is a high hill, from the summit of which Lieutenant M'Cluer saw both the extremes of the chain. Baubelthouap and adjacent islands.

Most of the other islands are rather low, but cultivated and inhabited. Corror, lying close to the southward of Baubelthouap, has many villages scattered over it: here, Abba Thulle resided about 60 years ago, whose authority was acknowledged by the inhabitants of the other islands. Urukthapel is the most considerable island to the southward, and Erakong lies close to the southward of it. Fronting the high, bluff, east point of Urukthapel, there is a large opening in the reef, with anchorage and good soundings, in about lat. 7° 16′ N., having a small channel to the north-westward, with 7 and 8 fathoms, through the middle of the reef inside, betwixt that island and Corror. When within the opening of the outer reef, another branch of the channel stretches along the east side of Corror to north-eastward, where is good shelter inside the reef; and this channel leads round the east and north sides of Corror to the western point of the island, with soundings in it from 10 to 25 fathoms. Corror.

Erakong Harbour, on the east side the island of this name, is sheltered by the outer reef, the entrance to it being in lat. 7° 13′ to 14′ N., through an opening of the reef to the southward of that mentioned above, and having soundings of 7 to 10 fathoms at the entrance, deepening a little inside. Erakong Harbour.

There is another small channel of 8 and 9 fathoms, in lat. 7° 8′ N., leading from the south-eastward close round the north side of the first small island to the southward of Erakong. A ship might *probably*, in a case of necessity, with a northerly wind, proceed into Corror, or Erakong Harbour, where she could be supplied with water and refreshments;* but the survey of these islands, made in 1793-4, is not sufficiently minute to afford proper directions for sailing into the harbours, and it would be imprudent to approach them with an S. Easterly or easterly wind, when the reefs become a lee shore. There are one or two channels through the great reef on the west side of the islands, navigable for small vessels; but large ships ought not to approach them on this side.

Pillilew, about 3 leagues S.W. of Erakong, is a fertile and well-cultivated island, about $2\frac{1}{2}$ leagues in length, having a range of small isles stretching North and N. E. betwixt it and Erakong. Pillilew.

The great reef is dry in many places at low water, and begins at the S.W. point of Pillilew, extending nearly North about 12 leagues; it then converges to N. E. towards the northern extremity of the islands. On the eastern side of the chain, the reef seldom projects above 4 or 5 miles from the shore.

Angour, the S. Westernmost island, is low, about 3 or 4 miles in length N. E. and S.W., having apparently a safe channel, about 4 miles wide, betwixt it and the south point of Pillilew; these islands are steep to, without soundings. Lieutenant M'Cluer places a rocky bank of 10 fathoms about $1\frac{1}{2}$ miles West from the S.W. point of Angour. The Mangles passed within 3 miles of it in 1806, and observed a reef projecting about Angour, or S.W. Island.

* The natives of the Pellew Islands used formerly to be hospitable to Europeans; but it seems now necessary to guard against treachery, if any ship touch at these islands, for the Syren whaler, Captain Coffin, March 31st, 1823, was nearly cut off when passing the southernmost island. About 30 large sailing canoes, with from six to ten men in each, came off to this ship, and about 100 men soon came on board in a friendly manner; but having watched an opportunity when few of the Syren's crew were prepared, they were attacked suddenly by the islanders, and after desperate fighting the latter were driven from the deck, although not till most of the ship's crew, 37 in number, were wounded, and two of the petty officers killed.

half a mile from the low sandy point. In the same year, the Anna, returning from China, made a tack or two with a westerly wind, to weather the point; and in passing it at the distance of a mile, no reef could be perceived, although the surf was beating high against the shore.

To sail from it northward.

When a ship is 3 or 4 miles off the west side of Angour, with an easterly wind, a N. by E. course will carry her clear off the western verge of the great reef, if there be no lateral current.

Tides.

Amongst the islands there are regular tides setting East and West, except when strong winds counteract them and produce a current; the rise of the tide is from 6 to 8 feet at full and change of moon.

Southern part of the Pellew Islands.

The S.W. end of Angour, or southern limit of the Pellew Islands, is in lat. 6° 53½′ N., lon. 134° 21′ E. by mean of eleven ships' observations and chronometers.

The east point of the large island Baubelthouap, forming the eastern limit of the chain, is in lat. 7° 41′ N., lon. 134° 55′ E. The northern limit consists of a group of four small, low isles, about 6 leagues distant from the north end of Baubelthouap; and Kyangle, the northernmost and largest of these isles, is in lat. 8° 8½′ N., lon. 134° 50′ E. by lunar observations, corresponding with its relative position from the S.W. extremity of the chain, as shewn by Lieutenant M'Cluer's survey.

The N. Westernmost danger is a large reef partly dry, in lat. 8° 18′ N., distant about 4 leagues N.W. of Kyangle. The Kyangle group is surrounded by a reef, betwixt which and Kossall, which is a large dry reef to southward, there is a channel about 2 miles wide, with irregular soundings of 40 to 10 fathoms, over the coral bank. Betwixt the south end of Kossall Reef and that projecting from the north end of Baubelthouap, there is another channel, in lat. 7° 56′ N., with irregular soundings on the coral bank, from 10 to 30 fathoms; and a patch of high breakers on the western edge of the bank, about 2 leagues to the westward of Kossall. It would not, however, be prudent to proceed through any of these channels in a large ship until they are fully explored.

Matelota Islands.

THE MATELOTAS are the westernmost of the extensive chain of islands called Carolinas, which stretch nearly East through the middle of the Pacific Ocean, chiefly betwixt the parallels of lat. 7° to 10° N. These islands bear from the northern extremity of the Pellew chain E. ½ N., distant about 58 leagues, and are sometimes seen by ships which keep far to the eastward on their passage to China.

They are small, low, and covered with trees; the inhabitants come off in their canoes at times to ships passing near, bringing with them coco-nuts, smoked fish, and pieces of cloth of their own manufacture. The southernmost island seems safe to approach on the south side; but dangerous shoals stretch from it in a northerly and N. Westerly direction around the other islands, also betwixt it and the two northern islands, which are connected and surrounded by reefs. With the wind at S. E., the Duckingfield-Hall got close to the east side of these islands in the night, January 22nd, 1798, and had soundings from 20 to 35 fathoms, coral rock. She made one or two tacks before daylight, mostly in soundings of 20 to 30 fathoms, but could not clear the islands, because the tide or current set strongly to the westward. At 7 A.M. it turned, and set eastward with strong ripplings; shortly after, when the southern island bore S. 10° W., and the two northern islands bore N. 10° E., and W. by S. ½ S., the depth decreased suddenly to 11, next cast to 5 fathoms. She then tacked to N. N. E. and immediately deepened; afterwards passed over two small patches of 5 fathoms, and rounded the southernmost island at 11½ A. M. At noon, observed lat. 8° 15½′ N., lon. 137° 44′ E. by chronometer, the southernmost island bearing north, distant about 4 miles, the other islands N. N.W. and N. 31° W.

The two northern islands bear N. E. ¾ E. and S.W. ¾ W. of each other, and are very dangerous to approach in the night; for a coral reef projects about 2 leagues northward of the N. E. island, with high breakers on it in some places. The Washington, American ship, passed on the east side of this reef and the islands, November 23rd, 1804, with a strong westerly wind.

The Althea, bound from China to Bengal, passed also to the eastward of these islands, July 20th, 1806, having been carried thus far to the eastward by S.W. winds and easterly currents; but if the wind admit, it is best to pass to the westward of them.

By mean of the observations of these ships and their chronometers, the southernmost island is in lat. 8° 21′ N., lon. 137° 44½′ E., and the N. Easternmost island in lat. 8° 34½′ N., lon. 137° 44¾′ E. Admiral Rainier, in H. M. S. Suffolk, passed near these islands, December 15th, 1796, and made the southernmost island in lat. 8° 17′ N., lon. 137° 34′ E., and the N. Easternmost island in lat. 8° 35′ N., lon. 137° 40′ E. by many lunar observations corresponding within a mile of the longitude by chronometers. Position.

YAP, or UNAWB, bearing from the Matelota Islands N. 19° E., distant 21 leagues, is the westernmost *large* island of the Carolina Archipelago. Several ships have fallen in with it, when proceeding by the eastern passage to China, although it lies to the eastward of the common track. Yap.

The south end of this island is very low, rising gradually into hills to the northward, and in many parts it is luxuriant, abounding with coco-nut trees, but it is not covered with wood. When first seen, the hills give it the appearance of two or three islands; and on a near approach, it seems to consist of a group of islands contiguous to each other, the whole encompassed by a chain of black rocks. The reef lining the southern and western parts is very dangerous to approach in the night, for it extends in a W. S.W. direction from the S.W. end of the island, about 2 leagues' distance, is steep to, and very narrow towards its extremity, with some of the tops of the black rocks upon it just appearing above water.

The Exeter with the Hawke and Henry Dundas in company, December 15th, 1793, saw a fire ahead at 5 A.M., and instantly tacked to southward. Shortly after, at daylight, Yap Island bore from North to N. E., distant 4 or 5 miles, and breakers on the reef N.W. by N. about 3 or 4 miles. The wind being westerly, with squalls and rain, they were employed during this and the following day working round to the westward of the island, which they cleared on the 16th at noon. The Swallow Packet passed near this island, March 18th, 1801, and the people which came off in canoes frequently pronounced the word Yap, whence its name. The Halcyon and Venus, American vessels, bound to Kamschatka and to the N.W. coast of America, saw this island bearing North at 4 A.M., May 16th, 1792. At daylight they steered along the S.W. side of the island within a quarter and half a mile of the reef, then hove to, for many canoes that were coming off, some of which had 15 or 16 men in them, and were exactly similar to the flying Proa of the Marian Islands. The chief articles brought off by these people were coco-nuts, hooks, and fishing-lines, some flying fish, tarro, pieces of mat-cloth, and spears. They were in every respect like the natives of the Pellew Islands, stout, and regularly formed, and seemed to understand the Pellew Vocabulary.

The island has a pleasing aspect, having many houses scattered over it, well constructed, in the same manner as those of the Pellew Islands; and there seems to be a large village to the S. Eastward of the reef. By mean of the observations of six ships

by ⊙ ☾ and chronometer, the south end of the island is in lat. 9° 30½′ N., lon. 138° 8′ E., their longitude corresponding within 2 miles of each other; its northern extremity is in lat. 9° 40′ N.

Position.

By these observations, the body of the island seems to be in lat. 9° 35½′ N., lon. 138° 8′ E., extending nearly North and South about 3½ leagues. Some observations of ⊙ ☾ taken in the Hawke made it 6½ leagues more to the westward; but those of that correct navigator, Captain Lestock Wilson, of the Exeter, exactly corresponding with others taken in the Swallow, are probably nearest the truth.

Islands seen by Captain Hunter.

The islands seen by Captain John Hunter, July 17th, 1791, returning from Port Jackson, in the Waezamheydt, were probably no other than Yap, which he places from lat. 9° 31′ to 9° 37′ N., lon. 137° 32′ E.; but as he passed them at the distance of 7 leagues to the eastward, his longitude may be liable to error; particularly as it is uncertain whether or not he got any observations at the time. About 7 leagues N. by E. a little easterly from the islands, the Waezamheydt passed over a narrow coral spit extending nearly North and South, on which she had 16 fathoms water, and saw the rocks under the bottom, at that time being in lat. 9° 57½′ N.

Coral bank to the northward.

Marian Islands.

THE MARIAN ISLANDS, called also the Ladrone Islands, lie to the northward of the Carolina Archipelago, and belong to the Spaniards; they extend in a N. N. E. direction from Guam to Saypan, then North, forming a chain, nearly from lat. 13° to 21′ N., having safe channels between most of them. GUAM, or GUAHAN, the southernmost and largest of these islands, is about 10 leagues in length N.E. and S.W., having the port of Apra on the west side, formed betwixt a peninsula and a large reef that fronts it to the northward. Umatac Bay, at the S.W. part of the island, also affords shelter with the wind between North and S. E., the anchorage being in 10 to 15 fathoms, sand, off the mouth of the harbour, with the fort bearing about N.E. by E., distant a quarter or half a mile. This bay was surveyed by Admiral Malespina, who made the fort in lat. 13° 21½′ N., lon. 144° 19¾′ E.* of Greenwich by astronomical observations. The town is of considerable size, and the Galleons used to touch here for refreshments, on their passage from Acapulco towards Manila. This island is moderately elevated, lined by reefs to the southward, with the shoal of Antury about 3 or 4 leagues off its north end.

Guam.

Umatac Bay.

Saypan and Tenian.

SAYPAN and TENIAN, lying near each other, betwixt lat. 15° and 15½′ N., the body of the latter being in lat. 15° 2′ N., lon. 145° 47′ E., are of middling height; and there is a peak on Saypan, the northernmost of these two islands. They have anchorage on their west sides; that of Tenian is in 20 to 35 fathoms, in a small bay near the south end of the island, but the bottom is rather foul, and the shore fronted by reefs. The west side of Saypan is also lined by a reef, and the Spanish plans project a reef from the N.W. part of this island, extending to S. Westward and southward, until opposite the north end of Tenian. Betwixt the N.W. end of this island and the reef there is a good channel, with soundings of various depths within the reef, and anchorage near the western shore of Saypan. These islands abound with limes, lemons, some cattle; and there is said to be plenty of wild hogs on Saypan, which articles are very renovating to the scorbutic crews of ships that touch here. English ships sometimes stop at these islands, on their passage from Australia towards Canton; although fresh water may be got in Tenian Bay, Saypan seems to be a better island

* Monsieur Duperrey, of the French surveying ship Coquille, made it about 10 miles more to the eastward.

for refreshments, affording also safer anchorage than the former. Bird Island, in lat. 16° 4′ N., lon. 146° 7′ E.,* is the next island to the northward of Saypan, there being a wide and safe channel between them. Anatajan lies 7 leagues to the N.N.W. of Bird Island, from whence the northern part of the Marian chain of islands are situated near each other, and extend about North and N. by W. to the islet Pajaros, in lat. 20° 34′ N., lon. 145° 48′ E. Other islands.

ASSUMPTION ISLAND, in lat. 19° 45′ N., lon. 145° 35′† E., is about 3 or 4 miles in length, of moderate height, with coco-nut trees on the west side, where is anchorage in 30 fathoms, black sand, about half a mile off shore; but the landing is difficult, and no adequate supply of fresh water for ships to be procured. Assumption and other islands.

THE MANGS are three high rocks in lat. 19° 57′ N., bearing (*true*) N. 27° W., distant 5 leagues from Assumption; URACAS, the northernmost of these islands, is a little farther northward, in about lat. 20° 20′ N. This group of islands is sometimes considered part of the Marian Islands, being a continuation of the chain. Alamagan Island, in about lat. 18° 5′ N., forms one of the chain, and other islands intervene between some of those mentioned above.

SULPHUR ISLAND, in lat. 24° 48′ N., lon. 141° 20′ E., is small, with steep perpendicular cliffs fronting the sea, rising into a high peak at the summit, which may be seen 12 leagues off. It is covered with shrubs and long grass, having a rock close to its west end, and a reef projecting about half a mile from the N. E. end, with 10 fathoms water within a cable's length of the shore, and 30 fathoms, rocky bottom, at the distance of half a mile. Sulphur Island.

This remarkable rock stands by itself in the middle of the ocean, but other small islands lie several degrees eastward, and others to the northward of it, the situations of which are not correctly known. There is said to be one or two dangers in the space betwixt Sulphur Island and the Marian Islands; and from thence westward to the Bashee Islands there appears to be a reef, in lat. 20° 32′ N., lon. 136° 12′ E., seen by Captain Douglas in 1789, which perhaps may be that seen by Captain Bishop in 1796, about 14 leagues farther to the E. S. Eastward.

ABREGOES SHOAL, in lat. 20° 59′ N., lon. 136° 38′ E., is said to be a dangerous reef, seen by Captain Mears on his returning passage from the N. W. coast of America; but its real situation has not been satisfactorily ascertained, and it possibly may be one of those mentioned above. Captain Bishop saw also a rock in lat. 25° 22′ N., lon. 132° 0′ E.; and Captain Kendrick discovered a low island in lat. 24° 30′ N., lon. 133° 36′ E., about 2 leagues in extent. Abregoes Shoal. Kendrick Island.

THE PACIFIC OCEAN being entered, as directed at the beginning of this section, for ships proceeding out of Dampier Strait, every advantage ought to be afterwards embraced to get sufficient easting whilst in a low latitude. The best track to effect this is betwixt the parallels of lat. 1° 30′ and 3° N., where a S. Easterly current will usually be experienced in December and January, which has already been described in the directions for sailing out by the Gillolo Passage. Directions for sailing from Dampier Strait towards China.

* By the observations of the ship Good Hope, in October, 1822, bound from South America towards Bengal. Monsieur Duperrey made it in lat. 16° 1′ N., lon. 146° 14′ E.

† In lon. 145° 44′ E. by Monsieur Duperrey.

The proper quantity of easting to be made must depend principally upon the judgment of the navigator, according to prevailing circumstances; but, as a general rule, it seems necessary to get into about lon. 136° E. before the parallels of lat. 3° or 3½° N. are crossed, if it be intended to pass to the eastward of the Pellew Islands. In ships which sail indifferently, or are in any way disabled, it is advisable to make sufficient easting with the variable winds in a low latitude, to be enabled to pass eastward of the Pellew Islands during the strength of the North-east Monsoon; but they ought not to run so far East as to fall in with the Matelota Islands, because spurts of westerly winds have sometimes been experienced there, both in November and December.

Ships which sail well may approach the southernmost extremity of the Pellew Islands, and proceed along their western sides, or pass within a moderate distance of them, which will generally be sufficient to enable them to weather the north end of Luzon at any period of the North-east Monsoon. But as the current in this season sets mostly westward, from 10 to 15 miles daily, in the track betwixt the Pellews and Bashee Islands, with strong N. E. winds and a heavy sea, in December, January, and part of February, ships passing eastward of the Pellew Islands will be more to windward, and probably reach the Bashee Islands with greater facility than others which pass westward of Pellew chain.

In this track, the sea commonly rises prior to a strong gale at N. E.; but Tyfoongs, likely to happen near the Head of Luzon and Formosa, give little or no warning of their approach, except by the fall of the mercury in a marine barometer, which is the best indicator of these storms; it is, therefore, prudent for ships passing between the Pellew Islands and the coast of China to be always in a proper state to encounter severe weather. From December to May, storms are seldom experienced; but in October, November, and December, also in June and July, many ships have been dismasted in the vicinity of the Babuyan, or Bashee Islands, and some have foundered with their crews to the eastward of Luzon. If a ship happen to be disabled to the eastward of this island, and unable to weather its northern extremity, she may pass to the westward through the Embocadero, and Strait of Manila, then proceed along the west coast of Luzon to the northward as far as Cape Bajadore.

In proceeding from Dampier Strait late in the season, you have no occasion to make so much easting as at an earlier period: late in February and in March you may pass westward of the Pellew Islands with safety, the violence of the North-east Monsoon being then on the decline, and the winds generally veer to the E. N. Eastward. Having reached the latitude of the north end of Luzon, you may pass through the channel between the Babuyans and Bashee Islands, or through any of the safe channels amongst these islands, as circumstances require. But if early in the season, and the wind hang at N. Eastward, you may pass round to the northward of the Bashee Islands, on either side of Gadd Rock, then haul up near the south end of Formosa, betwixt it and the Vele Rete Rocks, if thought necessary, when the weather is settled, in the daytime. By adopting this track, you will be well to windward on opening the west side of Formosa, where the winds frequently draw through from northward, between it and the coast of China, whilst they are prevailing from the N. Eastward outside the islands. During the night, or with unfavourable weather, when this track cannot be pursued with safety, it will be prudent to give a good berth to Gadd Rock and Vele Rete Rocks, by borrowing towards the North Bashee Islands; and by whatever channel you may have passed from the Pacific Ocean into the China Sea, endeavour to fall in with Pedra Branca, or the coast of China near it, attending to the lead in the night, and then proceed through the Lema Channel into the entrance of Canton River.

The light northerly and baffling airs, with constant S. Easterly or southerly currents, which are generally experienced after leaving Dampier Strait, render the progress to the eastward very slow; and afterwards it is frequently tedious getting northward as far as the Pellew Islands, because light N. E. winds and a southerly swell prevail greatly about the southern limit of the North-east Monsoon. When the latitude of the southernmost of the Pellew Islands is approached, the N. E. winds generally set in steadily, and the current changes and sets westward; but sometimes the regular North-east Monsoon is not experienced until clear to the northward of those islands. Whilst making easting in a low latitude, a good look-out is requisite, because there *may probably exist* some undiscovered dangers.

PASSAGE FROM CHINA, OUTSIDE THE PHILIPPINE ISLANDS, AND THROUGH PITT PASSAGE INTO THE OCEAN.

THE DIRECT PASSAGE from China to Malacca Strait may sometimes be performed by a fast-sailing ship against the South-west Monsoon; but it should not perhaps be attempted unless under particular circumstances, and only in ships bound to Bengal, or to the eastern side of that bay; for vessels are liable to strain and injure their sails and rigging greatly, in beating down the China Sea, and they may in general expect to experience a tedious passage. Remarks relative to sailing from China in the South-west Monsoon.

SHIPS departing from China, late in April or in May, have frequently adopted the route on the west side the Philippine Islands, particularly when easterly winds prevailed at the time of their departure, because these winds were unfavourable for passing out into the ocean, between Formosa and Luzon; nevertheless, the Outer Passage seems preferable after the middle of May, being more certain than the other, and ought to be pursued by ships bound to Europe, or to the western part of Hindoostan, particularly if they do not sail well when close hauled to the wind.

Departing from Canton River, late in May, June, or July, a ship ought to proceed by the outer track, to the eastward of the Philippine Islands, and through Pitt Passage, where she will probably meet with less embarrassment than by any other route, and may generally expect better winds and more settled weather. August is rather late for returning by an eastern passage, a ship leaving Canton River at this time may adopt the route along the coast of Cochin-China and Cambodia; but, unless she be a fast sailer, it will be better not to depart before September, for little advantage can accrue from sailing so early.* To proceed by the Eastern Passage.

If the wind is at South or S.W., and the route on the east side the Philippine Islands be followed, pass out through the Lema Channel, then haul to southward, in order to lead out into the Pacific Ocean without tacking; because the wind frequently veers to S. E., with strong northerly currents adjacent to the Islands situated between Formosa and Luzon.

* Particular information relative to sailing from China at all times of the year will be found under the title "China Sea," where instructions have been given for sailing through that sea.

The channel betwixt the Babuyan and Bashee Islands should be adopted if the wind permit, because it is clear of hidden danger, and farther to windward than the north channel between Formosa and the Bashees; besides, the latter is rendered unpleasant during thick weather, or in the night, by the Vele Rete Rocks and Gadd Rock.

Through the Pacific Ocean.

HAVING entered the PACIFIC OCEAN, the winds will usually be found variable, chiefly at S. Westward, and a current setting N. Eastward, or eastward at times, about 8 or 10 miles daily. Steer S. Easterly to avoid Cape Engano and the coast of Luzon; for the wind draws from southward and S. Eastward in the vicinity of that coast, with a strong current setting along it to the northward in this season, whereby several ships, keeping near the land in June and July, have greatly prolonged their passage. Care is also requisite not to get too far to the eastward, by tacking occasionally with the favourable shifts of wind, in order to keep in the fair track. Some ships have been carried by S. S.W. winds as far East as the Matelota Islands; but do not pass outside the Pellew Islands if it can be avoided.

In proceeding southward, the *fair* track is to steer for St. Andrew Islands, and pass eastward of these, Current Island, Meriere, Lord North Island, and Helen Shoal. If an easterly current is experienced, it will generally be weak, until the parallel of the south end of the Pellew Islands is approached; but in lat. 6° or 5° N., a strong set eastward may be expected in June, July, and August; which, from lat. 5° to 2° N., forms a belt, often running at the rate of 30 to 60 miles in 24 hours. Strong westerly winds sometimes carry ships speedily across this *belt of current;* but light baffling airs often predominate, and then they are liable to be set greatly to the eastward, frequently to lon. 138° E.; the Althea was set into lon. 141° E., when in lat. 4° N. To prevent loss of time, steer a direct course S. S.W. or South, across this current, to get clear of it speedily; for in lat. 2° to 1° N., the easterly current will be succeeded by a westerly set, which in this season generally prevails near the equator.

This current sets West and W. N.W., from 15 to 30, and sometimes 40 miles in 24 hours, adjacent to the coast of New Guinea and near the north side of Waygiou; but close into the entrance of Dampier Strait there is a tide or current frequently running out to the eastward.

Towards Dampier Strait.

Having passed eastward of St. Andrew Islands, steer southward, keeping in lon. 132½° to 133° E., if the wind permit; and having reached lat. 1° N., a direct course towards Point Pigot will be proper, or rather to make the coast of New Guinea a little to the eastward of that point, if the passage through Dampier Strait is to be chosen. It is, however, prudent, not to make the coast of New Guinea far from the entrance of the strait, unless the wind prevail steadily from eastward; because ships are sometimes retarded by westerly breezes, and a current running out betwixt Point Pigot and New Guinea.

Gillolo Passage.

THE GILLOLO PASSAGE, being wider, is preferred to Dampier Strait by several navigators, for there is seldom any difficulty in getting through it into the Pitt Passage, as the winds are often variable; and when they prevail from southward, a drain of current is frequently found to run through against the wind. If you adopt this passage, steer from lat. 2° N., nearly direct for the Asia Islands, passing to the northward of them if the wind permit; or otherwise, betwixt them and the Yowl Islands. You may proceed into the Gillolo Passage on either side of Geby, after passing the outermost islands, Eye and Syang; but during unsettled weather, the channel West

of Geby ought to be adopted, being wider than those to the eastward. In proceeding southward through the Gillolo Passage, keep to the eastward, in case of meeting with a westerly current off the south end of Gillolo; and the Pitt Passage may be entered by the wide channel formed between Pulo Pisang and the Boo Islands, or by that formed betwixt Kekik and Pulo Gasses, as circumstances require.

Dampier Strait.

IF DAMPIER STRAIT be chosen, round Point Pigot at 2, 3, or 4 leagues distance, as may be convenient, according to the prevailing wind, then steer about W. $\frac{1}{2}$ S. and W. by S. for King William Island, keeping it bearing about West or W. $\frac{1}{4}$ S. There is no danger in passing betwixt Point Pigot and New Guinea in the night; and the distance from that point being about 12 leagues to the narrow part of the strait, ships which pass round Point Pigot in the night have the chance of getting through the narrowest part of the strait on the following day, probably without being obliged to anchor, if the wind or tide be favourable. Steering from Point Pigot westward in the night, take care not to get to the southward near Battanta Shoal, nor too near the coast of Waygiou, for the tides run sometimes strong and irregular. When the night is clear this coast will be visible, and answer as a guide: if you run so far into the strait as to see King William Island bearing about West, you will be in the fair track, and when within 3 leagues of it, steer about S.W. by W. for Pigeon Island; but unless acquainted, and the night be very favourable, it would be imprudent to approach the east end of King William Island nearer than 3 or 4 leagues, until daylight. If a ship be drifted to the southward, into soundings near the shoal off the east end of Battanta, she ought instantly to bring up with a light anchor, to wait for daylight: and this will also be necessary, if she get upon the bank of anchorage to the eastward of Pigeon Island.

In daylight, steering from Point Pigot to the westward, Mansfield Island and the other low island near it will be seen bearing S. Westward, and Foul Island will be discerned soon after. These islands and the edge of Vansittart Shoal must have a good berth, by keeping King William Island about West, and steering towards Pigeon Island, bearing about W. by S. or W. by S. $\frac{1}{2}$ S. after it is discerned. This island may be passed on the south side at 2 or 3 miles distance, and after Augusta Island is brought to bear North or N. by E., you ought to keep within 3 leagues of the Battanta shore, in proceeding to the S. Westward, to avoid the shoal patches bordering the north side of the channel to the S.W. and westward of Augusta Island; observing, not to bring Pigeon Island to the eastward of E. N. E., nor Augusta Island to the eastward of N. E. by E. $\frac{1}{2}$ E., while they are visible.

To sail from Dampier Strait through the Pitt Passage.

Departing from Dampier Strait, work close round the western part of Battanta to Cape Mabo, prior to stretching over for Pulo Popa, if you intend to pass on the south side that island; because, with a S. S. E. wind and N. W. current, which frequently prevail between them, ships are liable to fall to leeward in crossing. When any difficulty appears in weathering Pulo Popa, no time ought to be lost, for the passage along the north side of it and the contiguous isles is safe, and should be immediately adopted: you may pass within 2 or 3 miles of the north side of Pulo Popa, and the isles that project from its west end, then haul S. W. into Pitt Passage, betwixt them and the Boo Islands.

Having entered the Pitt Passage, the mid-channel track may be preserved, inclining a little towards the islands which bound it on the south side, in order to counteract any current that may be setting northward. But the currents in the Pitt Passage, during the South-east Monsoon, are changeable, although they usually run westward

about 10 to 25 miles daily. The winds, also, vary frequently all round the compass, betwixt the large islands which form this passage, by which ships are usually enabled to proceed either northward or southward, during both monsoons.

When a ship has steered westward from Pulo Popa, and reached the opening between Ceram and Bouro, she may proceed into the ocean by the Ombay Passage, or by some of the straits farther westward, as circumstances require.

From Pitt Passage through the Ombay Passage.

THE OMBAY PASSAGE may be pursued during the South-east Monsoon, for the wind generally prevailing between East and E. S. E. in the Banda Sea will enable ships passing betwixt Manipa and the east end of Bouro to weather Ombay. Sometimes a strong southerly wind blows through the gut between Manipa and Bouro, but there is seldom any lee current. If difficulty be apprehended in getting through between them, you may round the west end of Bouro then haul close to the wind; and even from hence, you will *generally* be able to pass eastward of Ombay: but a good look-out must be kept for St. Matthew and Velthoen Islands, because at times there is a strong westerly current. The route into the ocean by the Ombay Passage has been already mentioned in the sequel of one of the preceding sections, where directions are given for sailing from China westward of the Philippine Islands, and through the Molucca Passage.* Ships from Amboina, steering for the Ombay Passage, ought to be careful not to haul too much to the eastward, on account of the Turtle and Lucepara Isles, which are dangerous to approach in the night. If a ship proceeding through the passage be in want of water or provisions, she will procure supplies by touching at Dilly, or Batto-Gady, on the north coast of Timor; or at Copang Bay, at the west end of that island.

From Pitt Passage to the westward through the Strait of Salayer.

The Ombay Passage is the quickest route from the Pitt Passage into the open sea; but if the track by Salayer Strait, and from thence through the Straits of Allass or Sapy, is to be followed, steer from the N. W. part of Bouro about S. W. for the northernmost Token Besseys Island, which bears S. W. $\frac{1}{4}$ W. from the N. W. end of Bouro, distant 64 leagues. If the wind blow strong from S. E. and a N. W. current be apprehended, steer S. W. $\frac{1}{2}$ S. from abreast the N. W. end of Bouro, to prevent falling to leeward in crossing; taking care not to borrow near St. Matthew Islands, nor to the eastern side of Token Besseys, during the night.

When it can be conveniently done, a ship ought to fall in with the northernmost island of Token Besseys in daylight, for some ships, by steering wide of it in the night, have got close to the N. E. part of Bouton; and after some delay, working against a strong S. E. wind and northerly current, were obliged to bear away, and proceeded through the Strait of Bouton. To make certain, therefore, of weathering the south end of Bouton, round the northern Token Besseys Island within the distance of 2 or 3 miles, it being steep to, on the north and west sides, no danger appearing to extend from it above a mile. Having rounded this island within the distance of a league, you will be enabled to pass round the south end of Bouton with a leading wind; from thence, steer about W. $\frac{1}{2}$ N. for Middle Island in the Strait of Salayer, taking care to give a berth to the Island Cambyna, when passing it in the night. If the north end of Salayer and the adjacent islands are plainly discerned before dark, a person well acquainted might run through betwixt Middle Island and South Island, when the night is clear; but it would be imprudent for a stranger to run into this strait in the night, as he might be liable to miss the proper channel, by mistaking one island for another.

* See page 584.

From Salayer Strait, if bound to Bengal in the Southerly Monsoon, steer westward, on either side the Brill Shoal, as most convenient, then so as to pass near Great Solombo; thence, steer to give a proper berth to the shoals off Pulo Mancap, and proceed through the Carimata Passage. From hence steer for the north end of Banca, and through the Strait of Durian, or for the Strait of Singapore, as seems most eligible. The passage into Malacca Strait will be speedy by either of these routes, and the latter may be chosen by persons unacquainted, observing to fall in with Pulo Panjang, giving a berth to Geldria Shoal, and passing close round the north side of Bintang, betwixt it and Pedra Branca. By following this route from Salayer Strait, and through Malacca Strait, a quick passage may be expected to Bengal. From Salayer Strait towards Bengal, or to Batavia.

If you intend to touch at Batavia, steer from Great Solombo, along the north coast of Java, either to the northward or southward of Lubeck and Carimon Java, as expedient; but the strongest breezes will be experienced outside these islands. After leaving Batavia, the route into the open sea, through Sunda Strait, ought to be adopted, whether ships are bound to Europe, to the western side of Hindoostan, or Bengal; unless those going to the latter place intend to stop in the Strait of Malacca, and in such case, they should pass through the Straits of Banca and Durian.

SAPY STRAIT, or the STRAIT OF ALLASS, is usually chosen, when ships bound to the western parts of Hindoostan, or to Europe, have adopted the passage through the Strait of Salayer. If you intend to proceed into the open sea by the Strait of Sapy, after passing along the west side of Salayer and Hog Island, haul to the southward, in order to counteract a westerly current, which may be expected in crossing; endeavour to fall in with the north end of Comodo, then steer for the western channel betwixt Gilibanta and Goonong-Apee, if in want of water or refreshments; for the eastern channel betwixt Gilibanta and Comodo is little frequented, although it *appears* safe, and is most direct when passing southward in the South-east Monsoon. Sapy and Allass Straits.

In steering from the west side of Salayer to the southward, give a berth to the outermost of the Tonin Islands, of which Mamalakjee, the westernmost, is situated in lat. 6° 41′ S., lon. 120° 14′ E. The N. W. Schiedam Island, in lat. 7° 1′ S., lon. 120° 28′ E., is the south-westernmost of this group of islands, which extend southward from Salayer, and it has a dangerous reef projecting a great way W. S. Westward from its S. W. extremity. Mamalakjee, N.W. Schiedam Island.

Ships steering from Salayer Strait, toward the Strait of Allass, have no occasion to borrow near these islands, but they must steer the proper course to avoid the easternmost group of Postillions, which bounds the west side of the passage. The south-easternmost group of these islands appears to consist of six or eight low woody islands, the largest in the centre, and extending from lat. 6° 45′ S., lon. 119° 15′ E., to lat. 6° 55′ S., lon. 119° 5′ E., measured by chronometer from Bally Town in the Strait of Allass. As these islands are thought to be surrounded and connected by dangerous reefs, they ought not to be approached closely, particularly during the night. Easternmost Postillions.

Having passed the latitude of this group, steer to make Selonda Island, in lat. 8° 8′ S., lon. 117° 44′ E. by chronometers; being moderately high, and flat on the summit, it may be discerned when the adjoining land of Sumbawa is obscured by haze. It is small, distant about 1 or 1½ leagues from Sumbawa shore, and 2 or 3 leagues eastward of Pulo Majo. A current will generally be found in this part, setting daily from 15 to 30 miles westward, in the South-east monsoon; and frequently much stronger eastward, during the opposite monsoon. Selonda Island.

Pulo Majo.

PULO MAJO, or MAYO, fronts the large bay or gulf on the north coast of Sumbawa; its north point is in lat. 8° 7′ S., lon. 117° 31′ E., and it is pretty high, about 4 leagues in extent; the coast of Sumbawa, eastward of it, is in about lat. 8° 10′ S. When abreast of Pulo Majo, about 9 or 10 miles distance, a course W. by S. ½ S. will carry you outside of Flat Island, which lies in lat. 8° 9′ S., lon. 117° 25′ E., bearing about W. by N. from the west end of Pulo Majo. Great care is requisite when passing here in the night, for several ships have nearly got upon Flat Island before it was perceived; and it must not be rounded at a great distance, on account of the SANDBUY SHOALS, which are two dangerous sand-banks, with rocks and coral shoals projecting from them, on which the Alexander struck, and was nearly lost, in 1806, when steering eastward from Lombock Strait. This ship made these banks in lat. 7° 42′ to 7° 47′ S., lon. 117° 25′ to 117° 29′ E., by chronometers, from Bally Town. The Minerva and Ardassier, steering out of the Strait of Allass, made these banks at daylight, January 9th, 1809, bearing N. E. by E. and E. N. E., in the direct course they were steering.

Flat Island.

Sandbuy Shoals.

Captain William Greig passed in the Minto to the northward of these shoals, between them and the southern islands of Paternosters, and saw one of them, which was a narrow sand, extending East and West about 2 or 3 miles. When 2½ miles northward of it, Lombock Peak bore S.W. ½ S., and Tumbora Mountain, or Mount Aron on Sumbawa, S. E. ¾ E., which places the sand-bank in lat. 7° 43′ S., lon. 117° 19½′ E., by its bearing from Lombock Peak, or in lon. 117° 13½′ E. by its bearing from Mount Aron.

Captain Warington saw the Sandbuy Shoals, which were two dry sand-banks, in the ship Mary Ann, July 29th, 1822, in a transit bearing N. N.W. and S. S.E. of each other, which he made in lat. 7° 45′ S., lon. 117° 13¼′ E. by good chronometers.

The Dutch frigate Maria Reygersbergen, April 1st, 1805, with 15 sail of ships under her convoy, at 8 A.M. saw a sand-bank, about 2 or 3 feet above water, bearing N. ½ W. about 2 miles distant, at the same time Lombock Peak bore S. 58° W., a high mountain on Sumbawa E. by S., north point of Pulo Majo S. 59° E., centre of Flat Island S. E. ½ S., the easternmost of the high mountains on the S.W. part of Sumbawa S. ½ E., off Pulo Majo 4½ or 5 leagues; and she made this sand-bank in lat. 7° 56′ S., lon. 117° 15½′ E. by chronometers from Batavia.

Besides these dangers mentioned above, there appear to be two other sand-banks farther eastward, seen by H. M. Ship Baracouta, September 19th, 1810; she was running at the rate of 8 knots, and saw a sand-bank bearing W. by N., which she made in lat. 7° 52½′ S., lon. 118° 3′ E., and shortly after saw another sand-bank in lat. 7° 54′ S., lon. 118° 0′ E.; therefore, if the Baracouta's statement is correct, there exist four different sand-banks between lat. 7° 42′ S. and 7° 56′ S., lon. 117° 13′ E. to 118° 3′ E.

There is a channel betwixt the west end of Pulo Majo and Flat Island, but ships always pass outside of them.

To sail from Flat Island into the Strait of Allass.

When abreast of Flat Island, steer S.W. by W. for the entrance of Allass Strait, preserving a moderate distance from the range of low lands that lines the N.W. part of Sumbawa, which is steep to, until within two-thirds of a cable's length of the reef that skirts some of them; soundings are then got of 60 or 50 fathoms. You may steer along these islands in the night if the weather is clear; but after running about 40 or 45 miles S.W. by W. from Flat Island, the narrow part of the strait will be approached, which is only 5 or 6 miles wide. The small rocky islands adjacent to Lombock shore,

which bound the west side of the channel, ought to be avoided in the night, for reefs project from them on the south and east sides. It would therefore be imprudent to pass through this narrow part of the strait during the night, unless certain of your situation, with clear weather, for the tides or current might drift you near the reefs. Close to these rocky isles and reefs there are soundings, where you may anchor in case of necessity; and there is a good channel, near a league wide, betwixt them and the Lombock Shore, with regular soundings of 12 to 16 fathoms water. After passing Rocky Islands, the strait becomes wide; steer then within a moderate distance of the Lombock Shore, to Bally Road; or in working, you may occasionally stand well over toward the Sumbawa Shore: this strait will be more particularly described in one of the following sections.

NORTH COAST OF JAVA, AND THE STRAITS TO THE EASTWARD.

THE NORTH COAST OF JAVA is fronted by regular soundings, with shoal flats extending along it in several places, and shoal patches detached from the shore bank; but in many parts the coast may be approached to 8, 7, 6, or 5 fathoms, muddy bottom. There are many towns and small villages along the coast, of which CHERIBON, SAMARANG, RAMBANG, &c., are places of considerable trade, the circumjacent country being generally fertile, and abounding in grain. North coast of Java.

That part of the coast comprehended between Java Head and Carawang Point, including Batavia Bay, has already been described in the chapter which treats of the south side of Sunda Strait. (See p. 143.)

CARAWANG POINT is in lat. 6° 1′ S., and forms the N. E. boundary of Batavia Bay. If bound to the eastward, steer to pass that point in about 15 fathoms, at 2 or 3 miles distance, which is bold to approach within 1 or 1½ miles. Steer then about E. by N. to clear Sedary Shoal, lying 10 miles off Sedary Point, which is extensive, and has a small channel of 4 and 5 fathoms between it and the point; the least water on it is 3 fathoms, and 10 fathoms close to on the outside. SEDARY POINT, in lat. 5° 59′ S., lon. 107° 27′ E., is not quite so woody as Carawang Point; with the low land well in sight from the deck, you will be sufficiently near the shoal. From the outer edge of Sedary Shoal, the course is about E. S. E. to POINT PAMANOEKAN, in lat. 6° 11′ S., lon. 107° 49′ E.; the coast may be approached to 8 fathoms, and from 10 to 14 fathoms is a proper track in the night, to pass within the WOERDEN CASTLE ROCK, where the ship of this name was lost; it lies in the stream of 17 fathoms, about 12 or 13 miles N. E. by E.* from Point Pamanoekan: close to its inner edge the depth is 15½ fathoms, and close to the outer edge 18 fathoms. Carawang Point. Sedary Point. Point Pamanoekan. Woerden Castle Rock.

The Princess Charlotte grounded on a shoal or rock, *apparently* farther out than the above danger, and received considerable damage. When aground in 2½ fathoms,

* The Dutch charts place it about N. E. from that point.

found round the ship only 19 and 20 feet water, at 40 or 50 yards distance, and then it deepened suddenly. Pamanoekan Point bore from the shoal S. by W. ¾ W., distant about 14 miles. After lightening the ship she floated off the shoal, steered then S. by W. 3 miles, and anchored in 19 fathoms, Pamanoekan Point bearing S. S.W., and the Woerden Castle Rock plainly visible from the deck bearing S. S.W., distant 1½ or 2 miles.

About 8 or 9 miles E. by S. from Point Pamanoekan, and 2½ or 3 miles off shore, there is a Three Fathoms Bank, in the stream of 6½ fathoms. The coast from Sedary to Indramayo Point is low near the sea, with some high land in the interior, and may be approached safely to 8 fathoms.

Indramayo Point.

INDRAMAYO POINT, in lat. 6° 15′ S., lon. 108° 20′ E. by chronometers, is of moderate height, and woody, and from having a river contiguous, it appears like an island: there is good anchorage on the west side this point in the easterly monsoon, in 4 or 5 fathoms.

Pulo Rackit.

PULO RACKIT, in lat. 5° 56′ S., lon. 108° 22′ E., fronts Indramayo Point, and lies in the stream of 25 fathoms; it is sometimes called Bumkin Island, but this name is generally given to the dangerous rocky banks North and N. N. E. of Pulo Rackit, partly above and partly under water, formed of detached patches of rocks, with deep water of 20 to 26 fathoms between them.

Bumkin Island.

BUMKIN ISLAND, or OUTER SHOAL, in lat. 5° 47′ S., lon. 108° 23′ E. by chronometers, is formed of white sand in the centre, with black rocks stretching out a great way at each extremity; close to it, the depths are from 23 to 26 fathoms, and 4 miles N.N.E. from it there are 30 fathoms, blue mud. The Volunteer, in October, 1812, had 22 fathoms, mud, with the shoal bearing from South to S.W. by W. distant 1½ miles from the nearest part; a large proa was lying here, probably fishing, the crew of which had built a hut on the shoal. Between this outer shoal and Pulo Rackit lies the Middle Patch, or Shoal, with soundings of 23 and 24 fathoms around, and between it and them. Upon this Middle Patch, the ship Bria de Mer, from Samarang, in October, 1812, got in the night, and a few minutes before striking had 26 fathoms water; she lay 18 hours on the shoal, and got off with the loss of her rudder.

If working through the channel between Pulo Rackit and Indramayo Point in the night, come no nearer the island than 19 or 20 fathoms, nor under 10 fathoms towards the point.

Cheribon Mountain.

CHERIBON, or CHERMAI MOUNTAIN, in lon. 108° 26′ S., will be discernible when in sight of Indramayo Point, and this point must not be sunk to the northward of W. by N. if a ship is not bound into Cheribon; for if brought to bear W. N.W. she would get upon the mud-bank of Cheribon, which should not be approached under 8 or 9 fathoms.

The anchorage at Cheribon, or Ceribon, is N. E. of the fort, in 3½ to 5 fathoms, and it is sheltered from the North-west Monsoon by a shoal bank that stretches from the north point of the bay to the eastward. Ships steering for the bay must keep well to the eastward of the point, and round the bank in 6 or 7 fathoms; and having approached the Java shore to 5½ or 5 fathoms, they ought to haul westward for the road.

From Cheribon to Taggal, or Tegal, the coast is low, but inland the country is

mountainous, and TAGGAL MOUNTAIN, in about lon. 109° 19′ E., will be seen bearing S. E. by S. when off the bight of Cheribon; it is higher than Cheribon Mountain. If within 4 leagues of the coast of Taggal, a remarkable crooked hill, called Goonong Gaja, or Elephant Hill, will be seen at the foot of the mountain, considerably to the eastward of Taggal, the Flagstaff of the latter being in lat. 6° 50′ S., lon. 109° 14′ E. The anchorage here is in 4 to 5½ fathoms, with the fort bearing South or S. by E., and it is 9 or 10 leagues to the eastward of Cheribon. Taggal Mountain. Taggal Flagstaff.

TAGGAL ROCK, or CARRANG LASAROOK, in lat. 6° 45½′ S., lies to the north-eastward of Taggal, about 4 miles off shore, in the stream of 9 fathoms; the sea sometimes breaks on it; at other times it is not visible, for Captain Owen, in H.M.S. Baracouta, August 20th, 1811, ran against it, while keeping a good look-out. When the rock bore West a third of a mile, the Peak of Taggal Mountain bore S. ¼ E., Elephant Hill S. 27° E., next high peak to the eastward of the Elephant S. 50° E. Taggal Rock.

August 24th, working along shore within Carrang Lasarook, Captain Owen observed at noon in lat. 6° 48′ S., with Taggal Peak S. 1° E., Elephant Hill S. 30° E., Taggal Flagstaff W. S.W., a village S. 45° E., off shore about 2½ miles, when the breakers on Lasarook were seen from aloft bearing North, about 2 miles distant.

To pass within this danger, 6 fathoms is a good depth, and not less than 11 fathoms to pass it on the outside.

From Taggal the coast lies nearly East to Samarang, and should not be approached under 14 or 15 fathoms in the night, when about 6 leagues eastward of Taggal, for nearly fronting Point Pamalang lies HOOGERMEER SHOAL, from which the Elephant Hill is said to bear S. S.W. From hence, 14 to 20 fathoms is a good track in the night, to avoid a Three Fathoms Shoal, said to lie off Roebang in 23 fathoms water, or 9 or 10 leagues eastward of Pamalang Point; and another shoal in 12 fathoms, off Kandal, more eastward; the latter has a channel of 10 to 5 fathoms between it and the Java shore. Hoogermeer Shoal.

Between Taggal and Samarang, the land is high in the interior, and towards the latter are the Brothers, two remarkable peaked mountains, the easternmost being farther inland than the other. To the eastward of these stands a mountain by itself, called MARBABOE or SAMARANG HILL, bearing S. ¼ E. from Samarang Road and Flagstaff, the latter being in lat. 6° 57′ S., lon. 110° 25′ E. Samarang.

SAMARANG BAY, bounded on the east side by the high land of Japara, is directly South from the island of Carimon Java; the anchorage in 5 or 6 fathoms, mud, about 4 or 5 miles off shore, is in lat. 6° 53′ S., with the Flagstaff of Samarang bearing from South to S. S. E., the high land of Japara N. E. by E., and the western extreme of Java, West; or a small ship may anchor in 4½ or 4 fathoms, nearer the shore. Ships which touch here may procure provision and refreshments; also at the fort and settlement of Japara, on the west side of the projecting land, that forms the eastern side of Samarang Bay, and stretches a great way northward. Japara.

The coast about Samarang, being low and forming a deep bight, when off it, the high land of Japara will be seen bearing about E. by N., appearing like an island, the course from Samarang Road to Japara Point being about N. N. E.

MANDALIQUE ISLAND, in lat. 6° 22′ S., lon. 110° 54′ E.* by chronometers Mandalique Island.

* Captain Ashmore, in 1822, made it in lat. 6° 22¼′ S., lon. 110° 57′ E. by chronometers.

from Batavia, fronting Mount Mosia, the next eastward of the high land of Japara, and near the sea, is a small round island, about 2 or 3 miles off the projecting part of the coast, having 5 fathoms about $1\frac{1}{2}$ miles off, and is bold to approach; there is said to be a passage with 4 fathoms between it and Japara Point. Do not bring this island northward of W. by N. till 5 leagues past it, to avoid an extensive mud-bank, projecting from the next point to the eastward. About 9 leagues E. S. E. of the latter point, in lat. 6° 35′ S., lon. 111° $27\frac{1}{2}$′ E., is LERANG POINT, having, in lat. 6° 41′ S., Lassem Hill over it; and between these points, near the east part of the bay, lie the ports of REMBANG and LASSEM, noted for teak timber and ship-building; with the village Jawana at the south-western part of the bay.

Lerang Point. Lassem.

Rembang. Rembang, in lat. 6° 42′ S., lon. 111° 19′ E., has several small isles and shoals on both sides the anchorage; to avoid which, bring the Flagstaff South, and run into 4 fathoms.

From Lerang Point, the coast is clear of danger eastward to the entrance of Sourabaya, and may be approached to 6 or $5\frac{1}{2}$ fathoms, or in some places to $4\frac{1}{2}$ fathoms.

Point Panka. Coast adjacent.

PANKA, or PANCO POINT, in lat. 6° 52′ S., lon. 112° $34\frac{1}{2}$′ E. by chronometers from Batavia, forming the west side the strait or channel leading into Sourabaya, is low and sandy, with a temporary flagstaff on it. A little westward of it lie four small remarkable hills; one called Coffin Hill from its appearance when viewed from the westward, one like a button, another like a hat, and the longest to the westward like a gunner's quoin.

If you intend to wait for a pilot to carry your ship into Sourabaya, bring Point Panka to bear S.W., and anchor in 5 or $4\frac{1}{2}$ fathoms off the Town House of Zidayo, where the pilots come from.

Sourabaya.

SOURABAYA, in lat. 7° $15\frac{1}{2}$′ S., lon. 112° 48′ E. by chronometer from Batavia, is a considerable town on the east part of Java, at the south end of Madura Strait, opposite the S.W. end of the island of this name. Ships going to this place generally require pilots to carry them through the strait. The anchorage is about half a mile northward of the river that runs through the town, with the flagstaff of the fort bearing S. 2° E., and the village of Grisse W. 30° N. This place abounds with provisions and refreshments of various kinds, and the Dutch carry on a considerable trade between it and Batavia and the other ports along the coast.

To sail into Sourabaya.

To sail into Sourabaya,* observe that the northern entrance of the Strait of Madura, formed between the N.W. end of that island and Point Panka, is about 13 or 14 miles wide, and the channel leading to Sourabaya is close round Point Panka, all the intermediate space between it and Madura being occupied by a mud flat, excepting a small channel for boats along the Madura shore.

Bring Point Panka to bear South till in 5 fathoms, you will then be about $2\frac{1}{2}$ or 3 miles distant, and near the edge of a rocky spit that projects from the point to the north-eastward. Keep about the same distance, rounding the point in $4\frac{1}{2}$ or 5 fathoms, and when abreast of it, steer S. S. E. till you get Fort Lodowick to bear S.E. $\frac{3}{4}$ S., then steer directly for the fort, and your soundings will be about 3 fathoms at half flood.

In running up, go to the westward of the fishing stakes, and round the east point of

* These directions are by Captain Arrow, of the Antelope, Bombay cruizer, who says, pilots cannot always be procured; but by following these directions, any ship not drawing more than 16 feet water may safely proceed up to Sourabaya.

Fort Lodowick at a quarter of a mile distance. With the wind contrary, after getting Zidayo House to bear S. S.W. $\frac{1}{2}$ W., never bring Fort Lodowick beyond S. E. to S.E. by S., and tack in $2\frac{3}{4}$ fathoms on each bank, till you have brought Zidayo House to bear W. by N., then you will quickly deepen: you have deep water rounding the fort, but it shoals quickly on the edge of the mud flat, great part of which is dry at low water. When abreast the east angle of the fort, steer over to the Madura side, to avoid a spit of sand stretching off from the S. E. end of the fort nearly a mile; from hence, keep near to the Madura shore, and when you see the fishing stakes, pass to the westward of them. In working, tack from the Java shore at the first decrease of the soundings, as the mud flat is steep to on this side; but you may work towards the Madura side without fear, until you reach its S.W. point, off which lie the Buffalo Rocks, joined by a sand-bank to the point. You may, however, pass them within half a mile, then steer directly for the shipping, and anchor in 8 or 9 fathoms about half a mile off the mouth of the river.

Captain Arrow observes, that the large house at Zidayo is the Sultan's house, and its roof is visible above the trees as soon as the latter are seen. Pilots do not come off unless the signal be made; and as pirates often lurk among the fishing proas, great caution is necessary in sending a boat to the shore. The shoals in the offing are steep to, and dangerous; the Buffalos are flat black rocks, with 5 fathoms water close to them. On the Java shore, bearing about W. by S. from the Buffalos, there is a point, to the southward and south-eastward of which, and forming a curve towards the town of Sourabaya, lies a bank, on which you may stand to 6 or 7 fathoms; but do not cross over it, as the water deepens suddenly to 8, 10, and 11 fathoms, where you would be on the rocks before another cast of the lead could be got.

Capt. Fraser's directions from Sourabaya by the north channel.

To sail from Sourabaya through the strait to the north-westward, Captain Fraser gives the following directions:—" Observe, that fishing stakes on either side bound the channel for the first 4 miles; then, if not high water, the Buffalos, two islets or rocks, will be seen abreast to the eastward, the outermost seldom covered, outside of which are fishing stakes. On the western side, in the bight between the towns of Grisse and Sourabaya, lie the Pysangs, an extensive shoal, not in the track of ships, as there is good room outside; but if it be approached, the water will deepen from 7 fathoms in the fair channel to 10 fathoms on the edge of the shoal, when a ship must instantly tack, or she will ground on the Pysangs."

" After passing Grisse, keep nearest the stakes on the Madura side, to avoid the shoal that extends from Grisse and occupies the whole of the western bight, towards which the bottom is foul and unfit for anchorage. By keeping on the Madura side, and steering from stakes to stakes, with 7 fathoms water, the wind and tide favourable, Fort Ludowick on the outermost island from the western side will soon be seen, and Bankalan pier on the eastern side. The course is N. by E., keeping still towards the Madura stakes. The spit of soft mud projecting from Fort Ludowick has a beacon on it, in $2\frac{3}{4}$ fathoms: here, the channel begins to contract, and the set of tides is various and strong. Keep the flagstaff West, and Point Panka N.W., and come no nearer the fort than with this bearing, or you will be on the spit. Both banks are steep to the channel, which is scarcely three-quarters of a mile wide; and if carried with the tide towards the spit, you will have from 12 to 5 and 3 fathoms, then aground. From the beacon the flagstaff bears S.W., and the Regent's White Wall at Zidayo N.W. by W. $\frac{1}{4}$ W., and in passing the beacon, it is usual to anchor a boat N. by W. from it, in about 3 fathoms. The tide is strong enough to back and fill through, and at the first of the ebb the water is turbid; but afterwards this subsides, and the shoal

water is discernible on either side the channel, but only during the Easterly Monsoon. Having passed the spit, the fishing stakes will lead you to the first beacon on the starboard or eastern side; the channel extending nearly N.W. and S. E., beaconed on both sides. Do not borrow on the Panka side until the first two beacons are passed, as the bottom is foul and rocky on the western side. The first beacon on the sea bank stands in $2\frac{1}{2}$ fathoms, hard ground, outside of which it is soft mud."

Madura Island. MADURA ISLAND is of an even appearance, and moderately elevated; its N.W. point is in lat. 6° 53′ S., lon. 112° $45\frac{1}{2}$′ E., and the N. E. point in lat. 6° 53′ S., lon. 113° $58\frac{1}{2}$′ E. by chronometers from Batavia; the whole of the north coast, which extends nearly East and West, is bold to approach, with regular soundings of 8 or 10 fathoms within 1 or 2 miles of the shore, in most places; but the east point opposite Pondy has a reef projecting from it to a considerable distance.

Watering place. At the N. E. part of the island there appears to be a good watering place, as the Phœnix, February 12th, 1707, anchored there, in $12\frac{1}{2}$ fathoms, soft ground, with the extremes of Madura bearing from S. E. $\frac{1}{2}$ S. to W. $\frac{1}{2}$ S., and the watering place S.W. by W. $\frac{1}{4}$ W., distant 4 or 5 miles, which is situated in a sandy bay, at the foot of a hill having the same bearing: this sandy bay has some rocks at each extremity, but affords good anchorage, and the water is excellent, easily procured, with plenty of firewood close to the sea. February 26th, she weighed, having remained from the 12th, and anchored again in 13 fathoms, Madura bearing from W. $\frac{1}{2}$ S. to S. E. $\frac{1}{2}$ E., watering place S. $\frac{3}{4}$ W., nearest shore S. W. $\frac{1}{2}$ W. distant 3 miles, Pondy S. E. 5 leagues, the southern part of it shut in with the east point of Madura.

Pondy. Pondy, a small and level island, in lat. 7° 1′ S., about lon. 114° 4′ E.,* is distant from the N. E. part of Madura about 4 or 5 miles, having a safe although narrow passage between them, by keeping the island from three-quarters to $1\frac{1}{2}$ miles distant. At Pondy, plenty of fowls and sheep may be procured, with bullocks weighing from 4 to $4\frac{1}{2}$ cwt. at $4\frac{1}{2}$ dollars each; and about a mile off its eastern side, the anchorage is good in 10 or 11 fathoms, mud. The channel betwixt it and Galion is safe, about 3 leagues wide, with soundings from 10 to 24 fathoms.

Shoals South of it. To the southward of Pondy there are two extensive shoals, the northernmost of which was seen on with the south end of Galion bearing E. by S. $\frac{1}{2}$ S., then distant from the shoal 2 miles, and 4 leagues from Galion; same time, the other shoal bore S. S. E. $\frac{1}{2}$ E. about $1\frac{1}{2}$ miles, Pondy N. E. by N., and Turtle Island, visible from the deck, S.W. $\frac{3}{4}$ S. The southernmost of these two shoals is a large sand-bank, and when on with the south end of Galion, it bears E. $\frac{1}{2}$ S. In July, 1811, H.M.S. Psyche, after passing between Pondy and Madura, least water 5 fathoms, passed also to the westward of these shoals at 2 miles distance, then steered S. by W. and passed Turtle Island at the distance of 2 miles.

To proceed into Samanap. If bound to Samanap by the channel between Pondy and Madura, keep within 1 or $1\frac{1}{2}$ miles of Pondy to avoid the shoal bank off Madura, then steer S. by W. till abreast the two shoals which lie South of Pondy; with this course, 7 fathoms will be the least water, and you will raise Turtle Island about S. by W. $\frac{1}{2}$ W. or S. S. W.; this is a small sandy isle with trees: when abreast the shoals, steer a proper course along the south side of S. E. Island, keeping in 4 to 5 fathoms until you see the town of Samanap bearing N. N. W., and anchor in 4 fathoms, about 4 miles from the town.

* Captain Ashmore, in 1822, made Pondy in lon. 114° 12′ 38″ E., and the N. E. end of Madura in lon. 114° 9′ 20″ E. In 1827 he made the west point of Galion in lat. 7° 5′ S., lon. 114° 19′ E., or 7° 27′ 4″ East of Batavia.

Samanap or Zamanap is a considerable town on the S. E. side of Madura, belonging to the Dutch, where provisions and refreshments may be procured, the adjacent country abounding with rice, and teak timber for ship-building. Here the Dutch build their largest ships for the country trade. Samanap.

The channel leading into Samanap Bay is on the south side of S. E. Island, having Turtle Island at the entrance, which is small, and the large island Nightingale inside; they are on the south side the common channel. A ship working in may stand towards the islands on the south side to 13 or 14 fathoms, and to 8 or 10 fathoms on the opposite side, shoaling gradually towards the entrance of the bay. The anchorage is in 4 or 5 fathoms, mud, with the south point of Samanap Bay bearing W. by S. $\frac{1}{4}$ S., the north point N. N. W., the fort N. W. by N., the outer extreme of S. E. Island East, and Galion E. $\frac{1}{2}$ S., off the nearest shore about $2\frac{1}{2}$ miles. To the westward of Turtle Island, with it bearing East to E. by N., and the east end of S. E. Island N. E. by N., there is a shoal, having on it only 2 and 3 feet water. To sail to the anchorage.

GALION, or RESPONDY ISLAND, S. Eastward of Pondy, is higher and of greater extent; both are well cultivated, having a pleasant appearance, and the common channel leading to the Strait of Bally is betwixt these islands. There is also a safe channel with soundings in it, East of Galion, which is bounded on the eastern side by Great Hog Island and the small adjacent islands. Great Hog Island lies directly to the eastward of Galion, having several small islands to the northward, and the Four Brothers farther to the eastward. Galion, and adjacent islands.

THE FOUR BROTHERS, in about lat. 7° 8′ S., lon. 115° 0′ E., are merely sand-banks or sunken islands to the westward of Kangelang; on the north side of them, at the distance of a cable's length, the depths are 18 and 20 fathoms, sandy bottom. Four Brothers.

URK ISLAND, in lat. 7° 15′ S., lon. 115° 13′ E. by chronometer from Batavia, is rather low and woody, having a sandy beach around, with a small reef at its S. E. part, and a rocky ledge projecting half a mile from the west and W. N. W. points; and from this point the Four Brothers are discernible. Urk Island.

KANGELANG, or CANGAYANG ISLAND, of middling height, and of great extent in an East and West direction; the north end is in lat. 6° 53′ S., lon. 115° $17\frac{1}{2}$′ E., and the south end in about lat. 7° 9′ S., lon. 115° $25\frac{1}{2}$ E. by the Dutch frigate Maria Reygersbergen's chronometers from Batavia, which ship with her convoy, at anchor under Kangelang, March 21st, 1805, in 24 fathoms, mud, made the observed lat. 7° 9′ S., lon. 115° $19\frac{1}{2}$′ E., Urk Island bearing S. W. about 10 miles. On the west side Kangelang lies an island, inside of which there is formed a good harbour, capable of containing 20 or 30 ships, where Dutch vessels sometimes take shelter in the North-west Monsoon, when unable to beat up to Batavia in that season. Between Kangelang and Urk the anchorage is good, over a sandy bottom, 25 fathoms close to Urk, 40 to 45 fathoms in mid-channel, and within 3 cables' lengths of Kangelang, from 10 to 15 fathoms. Kangelang.

The above-named frigate and convoy, from Batavia to Amboina, passed along the north coast of Java and Madura, then on the north side the Four Brothers and Urk, between them and Kangelang; afterwards, along the north coasts of Lombock, Sumbawa, Flores, and Wetter. The Dutch ships from Banda, bound to Batavia in June, July, and August, also prefer this route to that through the Straits of Salayer. Passage southward of Kangelang.

Antelope Islands.

The Company's cruizer Antelope, Captain Arrow, bound from Sourabaya to Amboina, passed to the southward of Kangelang, October 23rd, 1812, and saw four small low islands covered with trees, having no soundings near them; they appeared to be clear of dangers. By noon observation, when the S. Easternmost of these islands bore East, he made it in lat. 7° 12½′ S., and the central island in lat. 7° 11′ S., and in lon. 115° 50′ E., or 4° 38′ West of Middle Island in Salayer Strait by chronometers; at the same time, land, thought to be Kangelang, was seen from the mast-head at a great distance, extending from N. E. to N. W. These islands seem to lie far eastward of Urk, and at a great distance from the S. Eastern part of Kangelang by the above bearings, which would make the south coast of the latter farther northward than placed by the Dutch frigate's observations; neither do the Dutch place any islands far distant from the southern coast of Kangelang.

The channel northward of the Four Brothers, and between Urk and the S.W. part of Kangelang, appears to be safe, and is frequented by the Dutch, as stated above. Captain Ross, in passing through this channel, could not discern the Four Brothers, and therefore thinks it wider than usually represented. Captain Warington, from Sydney, by Torres Strait, passed between Urk and Kangelang, in the ship Mary Ann, July 30th, 1822, keeping nearly in mid-channel; foul ground appeared to project a considerable distance from the shore of Kangelang in some places. There appears also to be a safe channel along the north coast of Kangelang, and between the islands which front its eastern extremity, through which the ship James and Mary passed when bound from Borneo to England. The following extract from her journal may perhaps be useful, as the coasts of Kangelang are little known to British navigators.

North coast of Kangelang.

February 2nd, 1722, saw the north coast of Kangelang, and mistook it for Madura; at noon the eastern extreme bore S. E. by E. 4 leagues, having shoaled in the night suddenly from 42 to 17 fathoms water.

February 3rd, steered along shore E. S. E. and S. E. till 7 P. M., then anchored in 19 fathoms, the northernmost extreme of the land N.W. by W., a small island eastward S. E. by E. distant about 2 leagues, and our distance off shore 3 miles. In the morning, find by several small islands and sands near us, that this is not Madura, but Kangelang or Tanjayang, the easternmost point bearing S. E. ½ E., and two small isles near that seen at 7 P.M., one bearing S. E. by E. ½ E., a round sandy isle E. by S. ½ S., a long low island E. by S., and a small isle or sand appearing above the surface of the water E. S. E., distant above a mile, besides several others more westerly, seen yesterday. In a low valley near the sea, found several springs of fresh water, from whence we took on board 38 tons by the 7th. On the 9th, weighed, and steered N. N.W. out of the bay, till in 25 fathoms water, but had 5 fathoms on a shoal. With westerly winds, steered along the coast to the eastward, and saw a village, the chief of which came on board by invitation; here we lay two days, and got two or three buffaloes, some fowls, and a few goats.

Watering Bay.

On the 16th, 17th, and 18th, kept the boat sounding ahead, among the islands off the east end of Kangelang, where we found a passage between two islands, which I call Hopewell Island, and Passage Island. On the 16th, at 3 P.M., when Hopewell Island bore S. S. E. 3 leagues, a dry sand was bearing E. N. E. about 4 miles. At 7 P.M. anchored in 3 fathoms, sand and shells, off Passage Island, the east point bearing E. by N. off shore 2 miles, and the westernmost part of Hopewell Island W. by N. ½ N., and Lombock high land S. S. E. At 6 A.M. weighed, and had soundings from 5 to 18 fathoms, but the weather becoming squally, anchored again.

Islands and channel at the east end of Kangelang.

February 17th, at 5 A.M., weighed with the wind at W. N.W., soundings from 19 to

35 fathoms. At 8 A.M., the east point of Long Island* bore South, distant 3 leagues; at noon, its south point bore W. by N., distant one league, no ground 35 fathoms.

February 18th, at 4 P.M., the east point of Long Island bore N. E. by N., and its west point N. N.W., off shore 4 leagues. At 6 P.M. part of Kangelang bore N.W. $\frac{1}{2}$ N., distant 6 leagues; high land of Lombock S. E. by S., distant about 25 leagues. The westerly winds continued, which carried us clear through the Strait of Lombock, February 20th.

KALKOON, or TURKY ISLES, have been already mentioned, in the Section describing the islands and dangers in the Java Sea, (p. 588). These isles are low and small, stretching nearly from Kangelang, North and N. Eastward, to about lat. 6° 10′ S., having dangerous coral banks projecting from them far out to the eastward. The fleet from China, under convoy of H. M. S. Belliqueux, after passing through Macassar Strait, made these isles, July 12th, 1801, bearing from N. 58° W. to W. 10° S., some of them just in sight from the poop, distant 7 or 8 leagues. Here they got overfalls from 50 fathoms, mud, suddenly to 7 and 8 fathoms, coral, and the Belliqueux struck in $4\frac{1}{2}$ fathoms by the lead, and deepened at one cast from 10 to 40 fathoms. At this time the isles were not visible, but from noon observations taken 3 hours previously, the ship was in lat. 6° $30\frac{1}{2}$′ S., the lon. 116° 19′ E. by mean of five chronometers, Hastings Island supposed to bear S. by E. $\frac{1}{2}$ E. Near the same place, the Dorsetshire saw the rocks under the bottom, and had $4\frac{3}{4}$ fathoms. Kalkoon Islands. Coral banks.

HASTINGS ISLAND, in lat. 6° 56′ S., lon. 116° 24′ E.† by mean of the chronometers of the fleet mentioned above, is low, and it is the S. Easternmost of the Kangelang group, having a good channel to the eastward, betwixt it and the westernmost Great Pater Nosters, leading to Lombock or Allass Straits. From what has been stated, it appears that the Kalkoon Isles ought not to be approached on the east side in large ships, without great caution. Working southward with a S. E. wind, and westerly current of 10 or 14 miles in 24 hours, the fleet had generally soundings from 46 to 58 fathoms on the east side these isles, when some of them were visible from the poop or mast-head. After beating two days, they weathered Hastings Island, July 14th, passed eastward of it at 5 leagues' distance, and anchored at Bally Road, in Allass Strait, on the following day. Hastings Island. Adjoining channel. Soundings.

BALLY STRAIT has been mentioned in Volume First of this work, under the head of "Islands to the Southward and South-eastward of Java," &c.; but it here becomes necessary to describe particularly the dangers in this and the adjacent straits. Bally Strait.

Fleets of piratical proas at times rove about the islands and straits eastward of Java, rendering great caution necessary, more especially in small ships. A ship from Sourabaya to New South Wales is said to have been captured by 16 proas, in Bally Strait, in 1834, and to have had all her crew massacred.

Cape Sandana, or Sedana, in about lat. 7° 49′ S., bearing nearly South from Galion, is the extremity of the high land that forms the N.E. end of Java, and bounds the north- Cape Sandana.

* Called so by the natives.

† Captain Arrow, of the Antelope, passed on the south side this island, October 24th, 1812, and made it in lon. 116° 18′ E., or 4° 10′ west of Middle Island in Salayer Straits by chronometers. Captain Bowman passed to the north and eastward of it at 5 leagues' distance in the Diana, December 27th, 1812, and made it in lat. 6° 53′ S., lon. 116° 14′ E., or 9° 22′ east of Batavia by chronometers.

ern entrance of Bally Strait, on the west and N.W. sides. Over the point that forms the cape, stands a high indented table hill, called Mount Sandana, with each of its extremes sloping down, one forming the cape, and the other rounding into a bay. Soundings of 40 to 60 fathoms extend from Galion Island to this cape, and also to the westward, but none to the eastward of the cape. MYNDERS ROCKS, about 5 or 6 miles northward of the nearest land of the cape, consist of three small sand-banks, usually above water, but covered on high spring tides, and surrounded by rocks, with a reef projecting to the S.E., having 60 fathoms within a cable's length of them, at the north and east sides. These rocks are on with the centre of Table Hill, bearing S. by W. $\frac{1}{2}$ W., on with its eastern brow S. $\frac{3}{4}$ W., and on with the eastern extreme of Java bearing S. by E. $\frac{3}{4}$ E. H. M. S. Psyche, at noon, observed in lat. 7° 41′ S., with these rocks in sight from the deck bearing N. E. by E. $\frac{1}{2}$ E. about 6 or 7 miles, a remarkable hill on Java South, Cape Sandana S. E. 7 or 8 miles. There appears to be a shoal projecting from Mynders Rocks to the westward, for the Valentine having Cape Sandana bearing S. by E. about 4 leagues distant, and Mynders Rocks S. E. $\frac{1}{4}$ S. about 4 miles, found by her boat 3 fathoms upon the shoal to the westward, with these rocks bearing E. N. E. and Cape Sandana S. by E. About mid-way in a direct line from the easternmost point of Cape Sandana towards Gilboang, lies a 2-fathoms bank near 2 miles off the Java shore, with 20 fathoms water inside, and 30 or 35 fathoms near it to the northward and southward; the coast is lined by a reef from the point to the entrance of Bally Strait.

Mynders Rocks.

To sail into the Strait of Bally.

The narrow part of Bally Strait begins about 4 leagues South of the easternmost point of Cape Sandana, having Gilboang Island on the west side, near Water Point on Java; the S. Eastern side is bounded by the N. W. point of Bally, near which, to the eastward, is Hart Island, lying near this point. There are no soundings near the reef that projects N. E. and S. W., from Gilboang Island, nor near Hart Island, nor in the narrow channel that forms the north entrance of the strait, which appears to be only about a mile wide: therefore, endeavour to keep in mid-channel when passing through the strait, with the assistance of boats towing ahead if calm; for it is unpleasant, and sometimes dangerous, to approach the points closely, as the tides run 6 knots an hour during the springs, with eddies near the points in the narrow part, which are liable to horse you on the steep rocky shore of Java. On this account, ships usually give the preference to the Straits of Lombock, Allass, or Sapy, particularly if coming from the northward.

The narrow channel between Gilboang and Java might be taken in a case of necessity, for the ship William Money passed through it, October 7th, 1833:—the following is from her journal. After leaving Fort Utrich, with light airs, passed between Gilboang Island and the Java shore; the current setting us towards the reef on this shore, anchored in 45 fathoms water. Found Gilboang Island reef projecting a long way from the N. W. part of that island. Weighed at 8 P.M. with the tide favourable, and proceeded through this narrow passage between the Java shore and Gilboang Island. October 9th, anchored at Passurwang, got a pilot, and went through the south channel to Sourabaya; least water over the shoal bank $2\frac{3}{4}$ fathoms.

Fort Utrich and anchorage.

Bangi Wangi, or Fort Utrich, is in about lat. 8° 16′ S., in a bay on the Java shore, at the southern part of the narrows; it affords refreshments, and anchorage in 12 or 13 fathoms, soft ground, with the fort bearing West, about a mile or more off shore; but care is required to avoid the Deptford Rock, which is directly in the fair way in entering the bay from northward. The Deptford having grounded on it, December 26th, 1795, in 3 fathoms, found $2\frac{3}{4}$ fathoms on its summit, and could perceive several pieces of the coral break off, as the ship sallied. It is not more than a ship's breadth

Deptford Rock.

in diameter, shelving down suddenly to 6 fathoms, with 10 fathoms water within it, and 14 fathoms outside, at the distance of a ship's length. When on the rock, the red tiled house or storehouse bore W. S. W., the first point to southward S. $\frac{3}{4}$ W., distance off shore about 2 miles, in lat. 8° 14½′ S. To avoid this rock, ships should not borrow under 17 fathoms in coming from northward, until the fort is brought to bear about West, then haul in for the anchorage directly abreast the fort and village.

The volcano mountain on Bally is in lat. 8° 24′ S., lon. 115° 24′ E. by chronometers. Volcano Mountain.

Balambouang Bay, stretching South 4 or 5 miles inland on the Java side, nearly in the middle of the strait, affords water and refreshments; bullocks may be got, and fresh water in the adjoining river. Inside the bay, the depths are from 9 to 7 and 6 fathoms, but ships generally anchor off the entrance, in 10 or 12 fathoms, soft ground. Goonong-Ikan point, forming its eastern extreme, is said to be in lat. 8° 23′ S., but the Dutch plans place it farther South. High water at 10½ hours on full and change of moon; rise of tide from 6 to 8 feet.* From this bay the strait takes a S. E. direction, then southerly, and is much wider than the northern parts; the ebb tide generally inclines towards the Java shore, where is seldom found any safe anchorage; and the east point of Java being fronted by sunken rocks and breakers, requires a good berth in passing out to southward, or in entering the strait from that direction. Balambouang Bay. Tides.

Table Point, the southern extremity of the Island Bally, is in lat. 8° 50′ S., and forms the eastern boundary of the south entrance of the strait. The N. E. point of Bally is in lat. 8° 18′ S., about lon. 115° 43′ E. by chronometers from Batavia. The variation in 1822 was 1° 12′ E. off the south entrance of Bally Strait. N.E. point of Bally.

TO SAIL through BALLY STRAIT from southward towards Sourabaya. Captain D. Thompson gives the following remarks on this route. When the S. E. point of Java bears about North, it sometimes appears like an island, the land westward not being visible in hazy weather; and this point should not be approached nearer than 3 miles when sailing into the strait. Being abreast the point at 4 or 5 miles' distance, Goonong-Ikan Point will be seen bearing N. W., and appearing like an island; it may be passed at any convenient distance. About 9 or 10 miles North of this point is the settlement of Bangi-Wangi, having good anchorage in 12 or 14 fathoms water, with the flagstaff bearing about W. by N.; but ships ought not to go under 12 fathoms, the bank being steep to. In sailing through the strait from hence, endeavour to keep in mid-channel, or rather nearest to the Bally shore as you draw to the northward, and keep Gilboang Island on the larboard hand. After passing about 2 miles eastward of Gilboang Island, the course to Cape Sandana is N. ½ E., distant about 5 leagues. If bound to Passurwang or Sourabaya, you may pass between the Cape and the Mynder Rocks, which lie 5 or 6 miles N. by W. from Cape Sandana, and may usually be seen at 3 miles' distance; they extend East and West about half a mile, but not above 200 or 300 yards from North to South. Directions for Bally Strait, and towards Sourabaya.

From Cape Sandana to Tanjong China, a low sandy point, the course is N. W. by W., distance about 8 leagues; care is requisite in this track, to avoid the Hecate Shoal, which is very dangerous. H.M.S. Hecate, in May, 1812, sent an officer to examine it, who found 2½ fathoms, rocks, and on some parts there appeared to be less water, resembling breakers. When upon the shoal, Tanjong China, or Point Panarukan, bore N. W. by W., the highest peak over it W. S. W., Kali Puti Point, or the first to the westward of Cape Sandana, E. by S., the high land over the latter E. S. E. Hecate Shoal.

* The stream of flood is said to run northward in the middle of the strait until 12½ hours, and the ebb southward till about 7 hours, on full and change of moon.

Close to the shoal on the inside, there are 10 and 13 fathoms water, distant 3 miles from the Java shore. When the shoal was first seen, it bore W. N. W. from the ship, then in 14 fathoms; and to avoid it, a ship ought not to come under 17 or 18 fathoms water, unless she intend to pass between it and the coast.

Passurwang. From Tanjong China to the Island Katapang the course is West, distance about 17 leagues; and 6 or 7 leagues westward of Katapang lies Passurwang, where the anchorage is in 5 fathoms water, 3 or 4 miles off shore, with the flagstaff bearing from S. S.W. to S. W. by S. Here pilots are procured for Sourabaya, but ships drawing more than 15 or 16 feet water ought not to attempt the southern passage into that port, where there are only 12 and 13 feet, muddy bottom, at low water spring tides.

To sail into Sourabaya by the south channel. Captain A. Fraser, of the ship Lady Hayes, gives the following directions for passing into the Madura Strait to Sourabaya from southward.

The Lady Hayes, during the night, had 12 and 13 fathoms inside of Katampang, where she unexpectedly found herself at daylight.

Having Passurwang bearing S. by W., distant 8 miles, and not intending to take a pilot, steer North, or N. $\frac{1}{2}$ W., but not more westerly, in order to avoid dangers on the Java shore, keeping in 12 or 13 fathoms. A smooth conical peak will be observed to the westward, and when it bears W. by S., you should be in 12 fathoms; when W.S.W., in $7\frac{1}{2}$ fathoms:—when the depth begins to decrease, steer N. E. by N. for 2 miles, and if it be less than $6\frac{1}{2}$ fathoms, steer N. N. E.; the peak will soon bear S. W., with less water, probably $5\frac{3}{4}$ fathoms, about 8 miles from the strait. From this position steer North, and the water will shoal to $3\frac{1}{2}$ fathoms, soft ground, in 3 miles distance, if in the fair channel. If the bottom be hard, you will be too near the Java shore, but from hence the beacon can be seen that marks the edge of shoal water on the Madura side; it is made of timber, with a bamboo topmast, and from this position would bear about N.N.W., distant 5 miles. Steer for it until within $1\frac{1}{2}$ or 2 miles of it, then edge away about N.W. as the tides may require, passing within half a mile of the beacon; afterwards gradually haul up to W. by N. keeping close round the fishing stakes on the Madura side, where the water deepens to 7 fathoms, soft bottom. Keep rather to the northward, for by hauling up too soon for the shipping, you may get on a hard bank S. E. of the river's mouth.

The island off Tambay River marked in the charts does not exist, but there is a reef dry at low water, close to the Java shore; nor is the rock laid down N. N. E. from Passurwang known to the pilots, but the courses here given will lead clear of its site, and also the dangers off Bandigan, which island will not be seen if these directions are followed. It should be carefully avoided, unless the passage between it and Madura be entered, which is said to be safe. The Madura side of this gulf is most favourable for navigating, during the South-east Monsoon, or fair weather season. Off Belega there is a bank, which does not extend far out, and may easily be avoided.

Lombock Strait. LOMBOCK STRAIT has been described in Volume First of this work, under the head of "Islands to the Southward and South-eastward of Java," &c. It is, however, necessary to add a few remarks for the navigation of this strait. The tides or currents run strong through the middle of the strait, with eddies and no soundings, but there are a few places of anchorage on each side, where ships might occasionally stop

Carang Assem. and procure refreshments. Carang Assem, on the Bally shore, western side the strait, has a small stream of fresh water close to the village; here also bullocks, hogs, and poultry may be got; the contiguous country is cultivated. Captain Forrest anchored

here in 9 fathoms sandy bottom, about half a mile off shore, with Bally Peak bearing N. by E.; and experienced very little tide in this anchorage, when it was running 3 knots a little way out in the offing.

The large and deep bay of Ampannan or Appenam, on the Lombock side the strait, nearly opposite the road of Carang Assem, formed by Tanjong Rumbeeah to the northward, is 3 or 4 miles deep, and of considerable extent. H.M.S. Psyche touched here August 3rd, 1811, for which place, Mr. George Dawson, an officer of that ship, gives the following directions. Ampannan Bay.

On the south side of a high remarkable bluff cape, terminating to the northward and eastward in a small sugar-loaf peaked hill, are situated the villages Sangeegee, Ampannan, and Tanjong Carrang, fronting a fine level country, with many small rivers, and abounding with provisions of every kind. Mr. Dawson's directions.

To know this bay, and to sail into it, when coming from northward, observe that on with Lombock Peak bearing E. $\frac{1}{2}$ S., there is an island with a hill on its S. E. end, which pass at 3 or 4 leagues' distance, and steer eastward, not approaching the main under 6 or 7 miles, until Lombock Peak bears N. E. by E. $\frac{1}{2}$ E., or Bally Peak W. N. W., on account of Ampannan Bar, a ledge of rocks extending from Sangeegee, at the north side the bay, in a S. S. E. direction, to two small islands on the opposite side. In the plan of this coast, published by Mr. Dalrymple, 7 fathoms are marked as the least water on this ledge, but our boats found only 3 fathoms, with Lombock Peak bearing E. by N., and the northern extremity of the land N. by W. $\frac{1}{4}$ W.: the inner verge of the ledge appears to be about $3\frac{1}{2}$ miles distant from the shore.

Steering in for Ampannan, with Lombock Peak bearing N. E. by E. $\frac{1}{2}$ E., the northern extreme N. by W., and Ampannan River E. by N., with boats sounding ahead, we had several casts of 7, 8, and 9 fathoms, coral, then deepened again to 18 fathoms, sand, and shoaled gradually to the shore. We first anchored in $17\frac{1}{2}$ fathoms, about 3 miles off Ampannan bearing N. E. $\frac{1}{2}$ E., Sangeegee Village N. N. E., Tanjong Carrang S. E. $\frac{1}{2}$ S., Lombock Peak E. by N. $\frac{3}{4}$ N., extremes of Lombock from N. N. W. $\frac{1}{2}$ W. to S. W. by W., and Bally Peak W. N. W.; but being too far off for the convenience of watering, weighed and anchored again in $14\frac{1}{2}$ fathoms, fine sand, with the entrance of Ampannan River bearing East distant 2 miles, Lombock Peak E. by N. $\frac{1}{2}$ N., and Bally Peak W. by N. $\frac{1}{2}$ N.; from this anchorage, the shoalest part of the ledge bore W. $\frac{1}{2}$ S., distant 1 mile. Anchorage.

A ship steering in for the anchorage should bring Lombock Peak to bear N. E. by E., she may then pass with safety over the ledge, and anchor where most convenient. Should the Peak be obscured by hazy weather, the river of Ampannan being remarkable at the entrance by an opening in the trees, with huts on both sides, will answer as a guide; for this opening kept E. by N. will be a good leading mark. No tide was perceptible in the road, but the water which descends from the high land runs constantly out of the river, and the rise of tide is 7 feet, high water at 8 A.M., on full and change of moon. Our boats could not enter the river, on account of shoal water, and a heavy surf on the bar: the landing-place is on the beach at the head of the bay, about a quarter of a mile northward of the river, where the surf is not so high. Tides.

The water from the river, which is always good, not being affected by the flowing of the tide, may be procured about 100 yards from the beach, by rolling the casks across a neck of land. The entrance of the river is in lat. 8° 33′ S. Wood is scarce, all the land being cultivated; but provisions may be had from the Captain China-man, at moderate prices, *viz.* fine bullocks from 300 to 400lb. at 6 to 8 dollars; pigs, poultry, sweet potatoes, also pumpkins, oranges, and other tropical fruits, are procured at reasonable Fresh water river. Provisions and refreshments.

prices, and sometimes very cheap, besides rice and arrack. A fleet of 10 or 12 ships might be well supplied with provisions and refreshments here, if they can remain a few days. This road seems not to be very safe in the North-west Monsoon, for Captain Ross, in the Borneo, whilst riding here about 14 days in that season, experienced constant blowing weather, and was nearly driven on shore.

The trade is carried on by proas of 40 to 80 tons burthen, which go and return with the monsoons to Java and other parts; the exports are chiefly rice and slaves; the latter procured by war among the different tribes; and the imports, opium and piece-goods.

The Rajah of this part of the island resides at Carang Assem, about 7 miles in the interior, but Lombock is said to be governed by three different chiefs, who can muster 20,000 fighting men, many of whom are trained to use matchlocks; these they manufacture themselves. The pargalimo, or general, stated, that the population of the island exceeded 50,000. The villages have wide streets, with brick buildings for the principal inhabitants, encircled by walls about 15 feet high; and the other buildings for the inferior ranks, are large huts surrounded by a wall; the streets are lined by rows of trees, and these towns or villages have a neat appearance.

Laboan Treeang.

Laboan Treeang, or Tring, is a snug bay, and by the description of Captain Ashmore, who explored it in a Malay proa, in 1804, seems safe. Bally Peak bore from the bay N.W. by W. $\frac{3}{4}$ W., north point of Bally N.W. $\frac{3}{4}$ W., a reef extending some distance off shore on with Bally Peak, the houses of Ampannan just in sight. There is also another bay, with from 9 to 11 fathoms in it, and an island in front of both sides: going in, there are 20 fathoms about half-way from the island to the main, or a mile from the latter, bearing N.W. by W., the Peak of Bally bearing N.W. $\frac{3}{4}$ W., and the Peak of Lombock N. E. by E. $\frac{1}{2}$ E.

Captain Ashmore, in May, 1804, shoaled suddenly from 11 to $4\frac{1}{2}$ fathoms, rock, in crossing over the bar, and the boat had 3 fathoms. The water deepened inside to 10 and 11 fathoms, mud, and he anchored in 10 fathoms, sand, with Bally Peak W. by N. $\frac{3}{4}$ N., extremes of Ampannan Bay from S.W. $\frac{3}{4}$ W. to N. by W., the river E. by S. $\frac{1}{4}$ S., off the town $1\frac{1}{4}$ miles.

Isles off N.W. point of Lombock.

There is a high round isle off the N.W. point of Lombock, with two low isles a little to the north-eastward; and these isles lie in lat. 8° 13′ S., lon. 115° 59′ E. by chronometers.

At a small distance off the S.W. point of Lombock there is a rock above water; and several rocky islets front the S.W. point, and western side of Banditti Island, with a small isle near its N.W. point, which ought to have a proper berth in passing, by keeping in the middle of the strait. Green Island lies North of Banditti Island, towards the Bally shore, and is small.

Nearly opposite the south end of Banditti Island, in the low land of Bally, there is a small harbour, formed by some small islets, called Badong, to which the Buggis proas resort.

The Schilder Shoal, said to lie to the northward of Lombock, does not exist *probably*, although a good look-out is proper, when passing its assigned position.

Tides or currents.

The tides or currents seem to be irregular in Lombock Strait; those which run to the northward greatly prevailing when the winds are southerly, or light and variable. Ships, therefore, may often get quickly through the strait to the northward, whilst those bound to the southward are liable to great delay. It has been already mentioned in a preceding section (p. 541), where directions are given for sailing through the Carimata Passage, that the Minerva, Brunswick, and Chesterfield, were from the

15th to the 30th January, 1794, beating through Lombock Strait to southward. Of late years, the preference has generally been given to Allass Strait, particularly in ships bound southward.

Captain Ashmore went twice through the Western Channel, in the brig Emily, between the Bally Coast and Banditti Island; he describes it to be safe, about 6 or 7 miles wide, with soundings near the Bally shore, in some parts proper for anchorage. Padang Cove, in lat. 8° 30′ S., is small, and formed by reefs. Cassoomba Village lies S.W. of the latter place, and Carrang Assem 2 or 2½ leagues to the north-eastward, all on the Bally shore: as the tides run sometimes 6 knots an hour, with strong eddies and dangerous ripplings,* vessels are liable to be driven from their anchors, or to lose them at either of those places.†

THE GREAT PATERNOSTERS consist of groups or ranges of islands, mostly low and woody, extending nearly E. N. E. and W. S. W., about 32 or 35 leagues: many of them being surrounded by reefs, and having shoal patches of coral stretching a considerable distance to seaward, they are seldom closely approached; consequently, they are very imperfectly known. The westernmost islands are in about lat. 7° 15′ S., lon. 117° E.; Captain Greig, of the Minto, made the south-westernmost island in lat. 7° 32′ S., lon. 117° 16′ E. by lunar observations: the channel betwixt them and Hastings Island is about 12 leagues wide. The southernmost island is in lat. 7° 34′ S., lon. 117° 30′ E., bearing nearly North from the west end of Pulo Majo, on the north coast of Sumbawa, and directly to the northward of the two sand-banks described under the article Pulo Majo. When Pulo Majo bore from S. S. W. to S. by E. ¼ E., distant 6 leagues, Selonda Island S. S. E. ¾ E., the Ardassier saw the southernmost island of Great Paternosters bearing N. N. W. ½ W., distant about 5½ or 6 leagues. Great Paternosters.

The easternmost island of Great Paternosters is in about lat. 6° 42′ S., lon. 118° 40′ E., which, with the adjoining islands, are surrounded by reefs. When in lat. 7° 38′ S., lon. 117° 41′ E., the Minto saw one of the south-easternmost Paternosters, a rocky islet, bearing N. N. E., distant 5 miles; and the Dutch frigate Maria Reygersbergen saw two of them, low and woody, which she made in lat. 7° 36′ S., lon. 117° 55′ E.

THE POSTILLIONS are a large range, of mostly low islands, extending about 10 leagues nearly S. E. and N. W., with reefs projecting from several of them to a considerable distance. The north-westernmost islands of this range, in lat. 6° 32′ S., lon. 118° 48′ E., have been mentioned in the section, "Eastern Routes to China by Pitt Passage," among the Islands and Dangers in the Java Sea (p. 588). Captain Arrow, in the Antelope, passed on the north side within 7 miles of these islands, October 29th, 1812, and saw four of them, which were low and woody, lined with sandy beaches, apparently clear of danger, and no soundings were got in passing. The north-westernmost island has a small lump in the centre, and this island he made in lat. 6° 32′ S., lon. 118° 45½′ E., or 1° 42½′ W. from Middle Island in Salayer Straits by chronometers. The easternmost limit of the islands, in lat. 6° 45′ S., lon. 119° 15′ E., has been described near the sequel of one of the preceding Postillions.

* In May, 1805, a Dutch vessel of 75 tons burthen, in the middle of Lombock Strait, was thrown on her beam ends by the strong ripplings, and they were obliged to cut away every thing above deck before she righted.

† The supercargo of the Emily was assassinated at Cassoomba, in 1804, which shews that the inhabitants of these places ought not to be trusted.

sections, under the head, " Passage from China outside the Philippine Islands, and through the Pitt Passage into the Ocean."

There is a channel between the Postillions and easternmost islands of Great Paternosters, through which the Pocock and some other ships have passed, in proceeding from the Strait of Macassar to Sapy Strait. With a steady wind and favourable weather, it appears to be safe, but is not frequented, being imperfectly known; and the islands on each side are said to have dangers lining them, without any soundings in the fair channel.

Allass Strait.

ALLASS STRAIT, called GILLEESEE by the natives, has been mentioned in Volume First of this work, where directions are given for entering it from southward; but as this strait is more frequented than those described in the last section, particular instructions for sailing through it, with a brief description of the dangers, may be useful.

This strait, formed between the east coast of Lombock and the west coast of Sumbawa, extends nearly N. N. E. and S. S.W. about 15 leagues, and is about 5 or 6 miles wide in the narrowest part. It is preferred to any of the straits East of Java, the tides being usually moderate, with soundings stretching along the Lombock side, whereby ships are enabled to anchor when necessary.

Lombock Peak.

The north part of the Island Lombock is high bold land, the extremity projecting into a point of white appearance, in about lat. 8° 11′ S.; the peak is in lat. 8° 21½′ S., lon. 116° 26′ E.; and rises in a pyramidal form to the height of about 8,000 feet* above the level of the sea, with a large crater at the summit, having formerly been a volcano. The coast of Lombock that forms the strait is low close to the sea, with plantations of coco-nut trees at the villages.

At a small distance from the N. E. end of Lombock, and lying parallel to it, are the Twins, two low woody islands, with *apparently* a channel for small vessels inside of them; they are joined by a reef, and a spit projects from the south end of the southernmost island, having 6 or 8 fathoms on its extremity.

Rocky Islands.

THE ROCKY ISLANDS are three small isles, with a contiguous islet, having reefs and a sand-bank projecting from their eastern sides to the distance of 1 or 1½ miles; they are connected by rocks, but may be approached within a small distance on the west side. Opposite to these there is a group, fronting the Sumbawa shore, called Timor Yung, or Ten Islands; the outermost of which are long, low, and flat, having no soundings at a small distance from them. Between these and Rocky Islands are soundings of 40 and 50 fathoms towards the west side the channel, decreasing near the reefs which front the latter. This channel is about 5 or 6 miles wide, and was formerly thought to be the only one leading into the strait from the northward; but the channel on the west side of Rocky Islands is equally safe, about 2 or 2½ miles wide, between the islands and the Lombock shore, with tolerably regular soundings of 12 to 17 or 18 fathoms, rendering it very convenient for anchoring to stop tide, during contrary or light winds.

Adjacent channels.

Directions.

A ship proceeding southward through this channel ought to keep at least a mile from the Lombock shore, after passing between it and Rocky Islands, in order to avoid the Surat Castle shoal, which is a coral patch of 3 fathoms. It lies a little to the

* By a cursory trigonometrical admeasurement, in 1796, I made it 8,688 feet high. Captain Ashmore, in September, 1822, made the Peak in lon. 116° 29′ E. by chronometers.

southward of the point of land that bears about W. by S., from the south extreme of Rocky Islands, opposite a fresh water creek in the bight to the southward of that point: near it on the outside, the soundings are irregular from 7 to 14 fathoms, and there are 10 and 11 fathoms inside, betwixt it and the Lombock shore. By hauling too much into the bight, the Surat Castle grounded on this spot, March 4th, 1796; but with the assistance of a fresh breeze of wind, she soon got clear off. Although the channel along the Lombock shore is safe, by keeping about 1½ or 2 miles from it, there are overfalls in several places, particularly about 3 or 4 miles S. S.W. of Rocky Islands the depths are very irregular, from 25 to 10 and 7 fathoms, coral rock, but there is thought to be no less than 6½ or 7 fathoms water.

Segar, or Seegarra, distant about 3 leagues S.W. of Rocky Islands, is a small village at the south part of the bight mentioned above, having a coral bank fronting it, with good anchorage to the southward near the Segar shore. This place is said to be superior to Bally Town for procuring water at all times of the year. Segar Village.

Bally Town, or Loboagee, where ships generally anchor to procure water and refreshments, I made in lat. 8° 42½′ S., lon. 116° 33′ E., by a series of observations of ☽ ⊙ ✱ corroborated by chronometers, whilst at anchor in the road, in March, 1796, corresponding with the observations of several experienced navigators.* The anchorage for large ships is in 17 or 15 fathoms, black sand, about 1½ or 2 miles off shore, with Lombock Peak bearing N. N.W., the southernmost bluff island on the Sumbawa side of the strait E. S. E., and the next to the northward E. ½ N. or E. ¾ N. These islands are the best guide to know when abreast of Bally Town, which, being situated behind a tope of coco-nut trees, is not easily perceived from the offing. A ship may occasionally anchor in 12 fathoms abreast the river, but she ought not to go under 10 or 11 fathoms. Bally Town. Anchorage.

The town stands on the south side the river, which is fronted by a reef, stretching along the shore at the distance of 100 fathoms, and the proper channel through it for long boats is nearly opposite the river's mouth. Small boats may cross over the reef to the southward of the town, in fine weather, but on spring tides, during the Southerly Monsoon, strong sea breezes produce a great surf upon the reef, and then, loaded long boats can only pass through the proper channel when more than half flood, or near high water. Here, they anchor inside the reef, at the mouth of the river, and the casks are filled about 100 yards from the beach, and then floated off to the boats. The water is good, but ought not to be filled when the tide is high, for it is then brackish. Wood may be cut on the north side the river, about half a mile up, and floated down the stream to the boats. Reef. Watering river.

In the Northerly Monsoon there is seldom any difficulty in watering at Bally Town; our pinnaces got out of the river loaded at high water, but there is not sufficient depth for long boats. During the Southerly Monsoon it is often tedious getting water off from the shore; for strong southerly sea breezes generally set in at 9 or 10 o'clock in the morning, on spring tides, and continue to blow right through the strait until late in the afternoon, rendering it impossible for loaded boats to get off to ships in the road. Sea breezes.

The flood sets to the northward and the ebb to the southward, in the road, about 1½ to 2 knots on the springs; high water about 12½ hours on full and change of moon, but nearly 3 hours sooner upon the shore, and the rise of tide is 10 or 12 feet. The stream of tide is strongest on the Sumbawa side of the strait, where there are no soundings. Tides.

* Captain Bowman, in the Diana, at anchor in 10½ fathoms, with the town bearing W. 4° S., distant about 2 miles, observed in lat. 8° 41′ 59″ S., lon. 116° 34½′ E. by chronometers from Batavia.

The chief of Bally Town sometimes makes a demand of two muskets as a kind of port dues from ships which stop for water and refreshments; but he will generally be contented with articles of less value, such as a pair of pistols and some powder; fire-arms, shot, and coarse cutlery, being the articles they prefer. The inhabitants of this place and the other villages* have hitherto been considered friendly to English ships, supplying bullocks at 8 or 10 dollars each, also goats, poultry, particularly ducks in great plenty, paddy, rice, pumpkins, sugar-cane, plantains, and other fruits. But it now appears that great caution is requisite in small ships, if not well armed, when passing through any of the eastern straits; for Mr. Eilers, the Netherlands resident at Biema, on Sumbawa, states that the pirates, who have often visited the shores of Lombock, and plundered the different villages, had, in 1828, driven the inhabitants all away, and taken possession themselves, and that he understood there were upwards of 100 sail of proas employed in marauding around these coasts.

Refreshments.

Peejow Village.

Peejow Village, in lat. 8° 48′ S., about 5 miles southward of Bally Town, in the bay formed by the S. E. end of Lombock, is *said* to be a more convenient place for watering than the former, having a river navigable by boats, where the casks may be filled without landing them, and supplies be procured in great plenty. If so, the preference should probably be given to this place; as being in a bay, with regular soundings towards the shore, the anchorage would probably be more sheltered than Bally Road.

Captain Ashmore, in 1805, anchored at Peejow, in the Actæon, in 10 fathoms, black sand, and afterwards moved farther out into 16 fathoms, blue clay, with the river's mouth bearing N. W. by W. $\frac{3}{4}$ W., the town N. W. $\frac{1}{4}$ N., Peak of Lombock N. N. W., off shore $2\frac{3}{4}$ miles. After crossing over the bar of the river, it opens into a basin, in which were several proas; fresh water was procured from a well on its eastern side, but it was obliged to be carried about 15 yards to the boat. In March, 1804, this place was visited by 60 Lanoon, or pirate proas; and their depredations, together with a subsequent eruption of the peak, nearly destroyed the village.

Sumbawa coast.

Directions for sailing through the strait.

Winds.

The Sumbawa coast, which forms the east side of the strait, is all high rugged land close to the sea, and the islands fronting it are steep to. Ships working through the strait, with steady breezes, may stand over towards these islands, to benefit by the strength of the tide; but with light baffling winds they should keep in soundings near the Lombock side, to anchor if necessary, or when the tide is unfavourable. In the Southerly Monsoon the wind blows generally strong through the strait from southward during the day, abating in the evening, and veering a little off the Lombock shore. In the Northerly Monsoon it is variable, and not so strong; for southerly breezes sometimes prevail at the south entrance of the strait in this season, when the wind is blowing from northward into the north entrance. The best time to weigh from Bally Road, when ships are bound southward in the Southerly Monsoon, is early in the morning, in order to get clear out with the land breeze, before the strong wind begins to blow into the entrance of the strait, about 9 or 10 A.M.

* Captain Clarke, of the True Briton, was informed, that the villages in Allass Strait, and those contiguous, are named by the natives as follows, counting from southward. On the Lombock shore, Palaba, Peejow, Loboagee, Seegarra, Lombock, and Soudeeang. The Rajah resides at Mataran, in the interior, near the other side of the island.

The villages on the Sumbawa side are named Geravee, Tellewang, Satalow, Allass, Laboo-Padee, and Sumbawa, the chief town. The inhabitants of these islands have a particular language of their own, and write on the leaves of the palm tree with an iron style. At Bally Town they have several proas, and send one annually to Singapore, Malacca, and Penang. Both the islands of Lombock and Sumbawa abound with a hardy breed of small horses.

Captain Ashmore anchored at Allass in 37 fathoms, with Lombock Peak bearing N. W. ½ N., extremes of Sumbawa from N. by W. to S. by W., the two southernmost islands W. ¾ N. and N. N. W. ½ W., the land about the river's mouth E. ¾ N., distant about one mile.

The low islands lining the N. W. part of Sumbawa, called by the natives Timor-Yung (their northern extreme), are in lat. 8° 21′ S., lon. 116° 57′ E.; there are villages on the easternmost of them. The True Briton and Royal Charlotte were drifted close to these islands, by an easterly current during a calm, September 13th, 1797, and had no soundings until within a cable's length of the reef that skirts them. When the True Briton first got ground 50 fathoms, she anchored with a kedge, and had 30 fathoms under the stern, with the nearest part of the reef bearing S. by E., rather more than half a cable's length distant, extremes of the low islands from S. by E. ½ E. to W. by S. ½ S., Eastern extreme of Sumbawa East, and Lombock Peak W. ½ S. The first cast the boat had between the ship and reef was 25 fathoms, the next 10, then 5 fathoms, and suddenly 3 feet near the reef. A deep bay is formed by these islands, the points of which bear nearly East and West of each other; but the bottom being coral rock, renders this part of the coast unsafe to approach, with light airs and easterly currents. From the numerous huts seen, there appeared to be a populous village, probably Laboo Padee; but although the natives seemed friendly and desirous of bartering their poultry, &c., there was some reason to think that landing might not be altogether safe. Timor-Yung.

Laboo Padee is a village on the N. W. end of Sumbawa, southward of which about 1½ or 2 miles, lies Laboo Boot; but having no articles of trade for Europeans, there is no inducement to visit them. Captain Ashmore, however, anchored here in 1804, after having passed among several shoals, and over two patches in 5 fathoms water. When at anchor in 10 fathoms, sand, observed lat. 8° 24′ S., extremes of the bay from S. W. ¼ W. to N. E. ¼ N., northern island N. by E., other islands extending to W.S.W., distance off shore one mile. From hence to the Ten Islands it appeared like a canal, formed by islands and coral reefs, which they were two days in getting through. Their last anchorage in 19 fathoms, when the boat had 8 fathoms, close to the ship, and were then drifting fast down on the northernmost of the Ten Islands, was with it bearing West 1½ miles, northern extreme of Lombock N. W. ½ W. Laboo Padee, and Laboo Boot.

THE NORTH COAST OF SUMBAWA is indented with several deep bays, and is fronted in the distance by the group of islands called the Paternosters, and by other islands near the shore.

Sumbawa Bay is near the N. W. part of the island, to the eastward of the islands that line this part of the coast, and to the S. Westward of Pulo Majo, or nearly South from Flat Island: the bay is large, open to the North and N. W., with reefs projecting from the land on each side, and a good harbour stretching inland, between the reefs at the West side of the entrance. The soundings decrease quickly from 40 to 20 or 15 fathoms, near the shore at the bottom of the bay, or S. Eastern part, where the town and river of Sumbawa are situated in about lat. 8° 27′ S., lon. 117° 24′ E. The Nonsuch, from Bengal, anchored here in April, 1791, but this place is seldom visited by English ships. To the eastward of Sumbawa Bay there is a deep gulf, off the entrance to which are the islands called Flat Island, Pulo Majo, and Selonda. Between the two former and the western entrance point of the gulf is the Strait of Sallee, and on the eastern entrance point, near Selonda Island, is the remark- Sumbawa Bay. Town and river.

Tumbora Mountain. able Volcanic Mountain Tumbora,* or Mount Aron. Tumbora is in lat. 8° 9′ S., lon. 117° 43′ E. by chronometers from Batavia. This great gulf, or bay, is not frequented by ships.

Bima Bay. Bima, or Biema Bay, a narrow arm of the sea, near the N. E. end of Sumbawa, stretches southward 7 or 8 leagues into the island, with soundings of 60 or 80 fathoms at the entrance, 2 or 3 miles inside of which the bay narrows, and has on each shore a native fort; the depths at this part are from 34 to 30 fathoms, decreasing to 20 and 15 fathoms near the town and the mud fort of Bima, which lie on the eastern shore, and where the Dutch have a resident. Rugged Point, the eastern entrance point, is in lat. 8° 11′ S., lon. 118° 51′ E.; and Rocky Point, the western entrance point, in lat. 8° 8′ S., lon. 118° 36′ E.

The Maria Reygersbergen frigate, April 6th, 1805, anchored in Bima Bay in 26 fathoms, black sand, the East point of the bay bearing N. E. by N., the N. W. point N.W. by W. ½ W., the Battery S.W. by W. ¾ W., watering-place W. by S., and observed in lat. 8° 23½′ S., lon. 118° 44′ E. from Batavia by chronometers.

Pulo Cambing. Pulo Cambing, or Goat Island, lying nearly opposite Bima Fort, and between Badjo Baroo and Badjo Lamo, on the western side, being tolerably high, is seen from outside the entrance; the north point of Pulo Cambing is in lat. 8° 7′ S., lon. 118° 46′ 18″ E. by 41 sets of lunar observations, and 118° 46′ 45″ E. by chronometers, or 4° 42′ 26″ West of S. W. end of Timor. This position was fixed by Captain S. Ashmore, who touched here in September, 1828, and anchored in 6 fathoms, mud, with the north end of Pulo Cambing N. 79° W., Fort Flagstaff S. 79° E., East point of entrance N. 20° W., distant from low water mark a cable's length, and from Pulo Cambing 856 fathoms, by measured angles of the height of vessel's mast as a base. Variation. Variation 0° 7′ West in 1828. Tides. High water at noon on full and change of moon. Rise of tide 6 feet.

Captain Ross, of the Borneo, who visited this place, states the west side of the entrance to be safe to approach; the proper anchorage off the town of Bima being in from 12 to 6 fathoms, to the E. N. E. of Pulo Cambing.

Sapy Strait. SAPY STRAIT, formed betwixt the east end of Sumbawa and the west side of Comodo, or Rat Island, is considered safe, and was formerly frequented by the Company's ships; but it is not so convenient nor so spacious as Allass Strait, for the tides are rapid in the narrow part, where some rocky islets separate the strait into different small channels. The northern part is divided into two principal channels by Gilibanta Island, which is of considerable size, having a peak near the centre, and there are some small islands in the eastern channel, betwixt it and Comodo. Brief directions for approaching this strait from the southward have been given in Volume First of this work, but a particular description now becomes necessary.

* A tremendous eruption of this mountain, exceeding any thing on record of the same nature, took place April 11th, 1815, the effects of which were felt at Sourabaya on Java, at Maccassar, Amboina, and said to have reached Batavia and Banca. On that day, April 11th, the Company's ship Prince Regent, bound from Amboina to England, was off the Island Rotto, about 340 miles from Tumbora Mountain; heard a noise like guns in the night, which they thought was from volcanic eruption, and shortly afterwards the sky became obscured, accompanied by a heavy fall of dust at 10 A.M. on the following morning, and many land birds about, and on the rigging. The dust continued falling till the 14th, then 189 miles to the westward of the place where it was first seen, but not so heavy as on the two preceding days. The dust or ashes of this eruption spread far in every direction, reaching to Sourabaya, and great quantities fell at Bangi Wangi in Bally Strait. The Island Sumbawa suffered dreadfully, whole towns, villages, population, and cattle having been destroyed by this unparalleled phenomenon.

The eastern channel is little frequented, being the leeward side of the strait in the Westerly Monsoon, nearly destitute of soundings, and Comodo being high, steep land, with the ebb tide setting towards its steep rocky coast. The route through is nevertheless shorter than that by the other channel to the westward, and appears to be safe: it might be adopted occasionally, when ships are not in want of water, and when bound out to southward, during the South-east Monsoon; in all other cases, the western channel between Gilibanta and Sumbawa seems preferable.

Goonong Apee. Goonong Apee, called Table Point, distant about 3 or 4 miles from the N. E. point of Sumbawa, and bounding the north entrance of the strait on the west side, is high, and formed by a large mountain, the summit of which terminates in two high peaks, one to the S. Eastward, the other to the northward. The high, sharp lava peak, on the east part of the island, generally appears double, and is in lat. 8° 11′ S., lon. 119° 5′ E. by mean of many good chronometers.* Betwixt this island and Gilibanta, and a considerable way southward, the strait is wide and clear, until it becomes contracted by the islands eastward of Sapy Bay. There is a safe passage either to the northward or southward of Goonong Apee.

Sapy Bay. Sapy Bay, formed by the projecting S. E. part of Sumbawa, is protected by Middle Island, which stretches across the entrance, and between which and the northern shore is the usual passage into the bay. There is a small rocky island off the west end of Middle Island and another off its S. W. point. A coral flat lines the north side of Sapy Bay, but the Middle Island side is safe to approach; the soundings decrease regularly from 26 or 28 fathoms at the entrance, to 17 or 18 fathoms in the upper part of the bay, about half a mile below rocky island. The bay here is about $1\frac{1}{4}$ miles wide, where ships may occasionally anchor, and procure supplies of buffaloes, goats, Anchorage. fowls, sweet potatoes, coco-nuts, &c., from Sapy Town, situated by the side of a creek on the southern shore of the bay. The natives will barter these articles for fire-arms, coarse cutlery, red and blue handkerchiefs, and empty bottles; but single ships ought to be guarded against any treachery from these people, particularly if they anchor far inside, and are not well armed. Ships generally anchor in 24 or 25 fathoms at the mouth of the bay.

Sintodo Island lies to the eastward of Middle Island, and off its N. E. point is the islet called Booroosa Caper, with its two contiguous rocks. Matacote is a small peaked island, about 4 or 5 miles N. E. of Sintodo, having to the northward of it several rocks, sometimes called little Matacote, and others to the north-westward, called Middle and Black Rocks. Low Rocks lie about 4 miles N. $\frac{1}{2}$ W. from Matacote, and 3 miles S. W. of the south point of Gilibanta; they are even with the water's edge. Matacote is in one with Goonong Apee Peak, bearing N. 26° W. The track eastward of Matacote is followed at times, but the passage to the westward between the Black Rocks and Booroosa Caper is preferable; for by keeping along the western side of the strait, in coming from the northward, a ship is enabled to anchor under Sintodo during the flood tide, from whence she can weigh with the first of the ebb, and work out of the strait; and a ship coming from the southward, by hauling close round Sintodo,

* The longitude of Goonong Apee Peak seems to be well established; Mr. Brown, chief supercargo to the Company at Canton, made it in lon. 119° 4′ E., and 12° 13′ West of Point Pigot by three chronometers, or in lon. 119° 5′ E. Captain Torin, of the Coutts, made it also in 119° 5′ E. by chronometers from St. Paul and from Point Pigot, in 1800. Captain Clarke, of the True Briton, in 1796, made it in lon. 119° 6′ East, measured from Middle Island in Salayer Straits; and other navigators have made it nearly in the same longitude, by chronometers. The Dutch frigate Maria Reygersbergen's chronometers made it in lon. 118° 59′ E., measured from Batavia.

will preserve the weather shore, avoid the low rocks, and get sooner into anchorage. Camara Island lies near the shore about 5 miles to the southward of Sintodo, forming the western side of the southern entrance of the Strait, its eastern side being the S.W. point of Commodo, which has an islet off it.

Rees and Britannia Bays.

Rees Bay and Britannia Bay are formed by the projections of the Sumbawa shore, to the northward of Sapy Bay, at either of which, ships may procure wood and water. The watering-place in the cove of Rees Bay bears from Booroosa Caper W. $\frac{1}{2}$ N.; but the best anchorage is in 20 fathoms, mud and sand, with it bearing about E. $\frac{1}{4}$ S., to avoid the shoals inside, and along the north side of the bay. The southern part of this bay is clear of danger; but there is a bank of $6\frac{1}{2}$ fathoms, sand and shells, at the north part, with 18 and 19 fathoms, mud and sand, all around; and inside there is a coral spot, having on it only 10 or 11 feet water.

The Watering Pond in Britannia Bay, bearing from Booroosa Caper W. 29° N., is about 20 yards from high-water mark, and small casks, which can be carried by two men, are best for watering at any of these bays. As the soundings are irregular, with rocky bottom in the middle of this bay, a ship intending to water here should anchor in 25 fathoms, about a mile off its northern point; for a rocky shoal stretches from the southern point of the bay nearly to Island Point, with some parts of it almost 2 miles off shore. As the points on this part of Sumbawa have small spits projecting from them, and the bottom being generally hard sand northward of Island Point, a bower anchor is required to secure a ship here in the Westerly Monsoon.

Soundings.

There are no soundings, unless very deep, near Gilibanta; the outer verge of the bank, where are from 40 to 50 fathoms, stretches nearly in a direct line from Booroosa Caper to Goonong Apee, decreasing pretty regularly to 20 fathoms in most parts, from half to a quarter of a mile off Sumbawa shore. No soundings are got in the south part of the strait, South of Matacote; but within half a cable's length of it there are 20 fathoms, and 25 fathoms between it and the low rocks adjacent, deepening to the northward.

Tides.

Hereabout, the bottom is all rocky, with overfalls; and rapid tides setting past Matacote 4 and 5 knots per hour during the springs, produce strong ripplings resembling breakers, which are alarming to strangers, and the eddies may sometimes render ships ungovernable. As the Low Rocks are nearly even with the water's edge, the track between them and Matacote is not so safe as that betwixt the Black Rocks and Booroosa Caper, by keeping near Sintodo, and rounding its eastern part about the distance of a mile; for some ships have been drifted nearly on the rocks, by the rapid tides.* Although the tides set rapidly through the middle of the strait, the flood to the northward and the ebb to the southward, they become much weaker within the verge of soundings near the north-eastern part of Sumbawa, and there is very little tide in the

* The Northumberland, bound to China, rounded Matacote very closely, with a spring flood and brisk N.W. wind, in February, 1783; when the low rocks were seen from the mast-head, she bore up against the tide, and with difficulty cleared them about the distance of a cable's length. Returning from China in September, 1796, the Britannia, with a fleet of 10 sail, was passing Matacote about a mile to leeward, with a southerly wind and strong ebb tide; the helm was then put up, and the wind brought on the quarter; but the ship not stemming the tide, and judging by its rapidity that there was a clear channel, she passed betwixt the middle rock and Matacote. Two ships of the fleet passed eastward of Matacote, but all the others went between the Black Rocks and Booroosa Caper. The Cornwallis, in August, 1796, bound to the southward, found the tide setting strong to S. E., on her approach to the westernmost rocks; and after tacking within 100 yards of them, she stood S. by W. close to a range of breaking water, which extends $2\frac{1}{2}$ miles southward of the rocks. This seems to have been only a strong rippling occasioned by the rapid tide, which they apprehended might be a reef; and seeing deep water to southward, they hauled in for it, worked close round the N. E. point of Sintodo, with a very strong gale at S. E., and passed the eastern rock off Camara Island, about the distance of a cable's length.

bays. It is high water in Britannia and in Water Bay, about 1 hour on full and change of moon, and the rise of tide is said to be 11 or 12 feet.

Winds. The winds are variable in Sapy Strait, forming a kind of land and sea breezes, those from westward prevailing in the Westerly Monsoon; and during the opposite season, strong breezes blow into the strait from southward great part of the day.

To sail through Sapy Strait, and towards the Strait of Salayer. Ships bound northward, after passing along the western side of Sapy Strait, should borrow towards the east side of Goonong Apee, which is bold to approach. If the route through Salayer Straits is to be pursued, care must be taken to keep well to windward in crossing over for Salayer; because a strong easterly current generally prevails in the Westerly Monsoon, when the wind blows with much strength. From this cause, several ships have fallen to leeward of the islands fronting the south end of Salayer, at different times, and were obliged to pass along the east side of that island; whilst others have steered eastward on the north side of Flores, which is preferable.

Ships steering from Salayer Straits towards the Strait of Sapy in the Southerly Monsoon ought to endeavour to fall in with the N. E. point of Comodo, situated in about lat. 8° 22′ S., and $32\frac{1}{2}$ miles East of Goonong Apee Peak by chronometers.

Mangerye Strait. MANGERYE STRAIT, formed between Comodo and Flores Islands, is 7 or 8 leagues in length, and not frequented, for the clusters of islands with which it is studded render it an intricate navigation. The S.W. point of Flores, in about lat. 8° 50′ S., forms the eastern boundary of this strait in coming from southward; and Aligator Bay is 4 or 5 miles north-west of that point, being only about a quarter of a mile wide, with soundings of 50 fathoms at the entrance, decreasing inside to 20 and 15 fathoms, mostly sand and coral. Mr. Dalrymple anchored here, in the Cuddalore schooner, in 1761, and found fresh water in the cove round the bluff point that forms the east side the bay. The cove called Mangrove Harbour is about $1\frac{1}{2}$ miles northward of Aligator Bay, being a quarter of a mile wide at the entrance, with soundings of 17 to 12 fathoms, near the southern shore, decreasing to 7 or 8 fathoms inside. Here, it is about an eighth of a mile wide, and there is a fresh water stream at the N.E. extreme. Close to the entrance of this cove lies an islet, contiguous to a Saddle Island; and about 2 miles outside is West Island, having a peak on it: there is a coral shoal of one fathom inside this island, with 30 and 40 fathoms water between it and the shore of Mangerye.

Aligator Bay.

Mangrove Harbour.

Flores Island. FLORES, called also ENDE, or MANGERYE, is an extensive island, being about 70 leagues in length East and West. and 14 or 15 leagues broad in some parts.

The north coast runs in a general East and West direction, curving to the northward towards the eastern end, near which is the promontory called Flores Head, or Iron Cape.

Flores Head. Flores Head is in about lat. 8° 5′ S., lon. 123° 2′ E. by the Castlereagh's observations,* and is high, bold land; it bounds the west side of the northern approach to the Flores Strait. This cape is about 11 or 12 leagues East of Rusa Linguete; the Castlereagh, from having the island last mentioned bearing North at 2 A.M., distant about 2 leagues, steered N. E. $\frac{3}{4}$ E. 16 miles to daylight, the Island Rusa Linguete then bore W. by S. $\frac{1}{2}$ S., and Flores Head E. $\frac{1}{4}$ S.

* The Sibbald's chronometer placed it in about lon. 122° 48′ E., and the frigate Maria Reygersbergen made it in lon. 122° 46′ E.; but their observations appear to be too much westerly; the mean of the whole, 122° 52′ E., is probably near its true longitude.

April 20th, 1816, in the Sibbald, at noon, observed lat. 7° 47′ S., lon. 122° 50′ E. by chronometers, Flores Head, the centre, bearing S. ½ W., Lobetobie Peak S. E. by S., Sebrao Peak S. E. ¼ E., and Pulo Comba E. ¼ N.

From the S.W. point, near Aligator Bay and the entrance of Mangerye Strait, the south coast stretches East and E. by S. to about lon. 121° 30′ E., the southernmost part of the island. The coast from hence stretches East, then E. by N. to the Volcano of Lobetobie, which stands near the S. E. point of the island. This coast is steep to, no soundings being found, except in some of the bays near the shore; and there appear to be no dangers projecting far out. Tower Island, fronting the coast at a small distance, lies about 12 leagues to the eastward of the S.W. point of Flores, and rises almost perpendicularly from the centre in a high peak. Eastward of this island about 15 leagues there is a high volcanic mountain in the vicinity of the coast, and a remarkable peak about 8 or 9 leagues westward of the S. E. extremity of Flores.

South coast.

Port of Ende.

Ende, situated near the middle of the south coast, although little known, is *said* to be the principal port of the island, capable of holding any number of ships in safety. It was taken possession of by a colony of Buggese, some years ago, who have revolted against the European authorities, and decline trading with Copang. This is the only safe harbour known on the south sides of the islands between the coast of Java and Ombay.

The channel betwixt Sandalwood Island and the south coast of Flores is about 10 or 12 leagues wide, and clear of danger.

Sandalwood Island.

SANDALWOOD ISLAND, or JEENDANA, has been partly described in Volume First of this work; but a farther description is necessary, particularly of the bay near the east end of the island. The eastern extremity of this island is in lat. 10° 0′ S., lon. 120° 45′ E. by mean of chronometers, and lunar observations taken in several ships;* and it is thought to be bold and safe to approach in this part.

The channel formed betwixt its eastern extreme and New Island, Banjoan, and Savu, is wide and clear of danger.

Captain White describes the S. E. coast of Sandalwood Island to have a reef fronting it, at the distance of 3 or 4 miles. At noon, August 7th, 1828, the Satellite observed the lat. 10° 29′ S., lon. 120° 21′ E. by chronometer, the south point of the island bearing N. E. ½ N., distant 10 miles; a low island, with coco-nut trees, was in one with a high conical mountain, bearing N. E. 7 miles, and with another small island, about a third of the distance from the south point of the main island, towards the abovementioned low island. The south point of Sandalwood Island is very remarkable, by terminating in a peninsula almost as high, and apparently as inaccessible, as the Rock of Gibraltar, having a spacious bay on each side of it, particularly that on the west side; which seems well sheltered from the South-east Monsoon, by the detached islands and low isthmus that separate the high peninsula from the general contour of the coast.

The other coasts of Sandalwood Island are *generally* steep to, and no soundings are got until near the shore in some places; but there is anchorage in the large bay, formed on the north-east side of the island, now to be described.

Padewawy Bay.

Padewawy, or Baring Bay, in about lat. 9° 37′ S., at the N. E. part of Sandalwood

* The mean of lunar and chronometric observations, taken in the Thames, Buccleugh, Carnatic, and Glatton, made the east point in lon. 120° 35′ E. Captain White, of the Sherburne, made it in lat. 10° 4′ S., lon. 120° 43′ E.; but Captain Ashmore, in 1822, made it in 14° 0′ 34″ E. from Batavia, and in 1827 he made it 14° 0′ 57″ E. from Batavia by good chronometers, which places the east point in lon. 120° 52½′ E.

Island, about 4 or 5 leagues West from its north-eastern extremity, affords anchorage in the western part, off the mouth of Padewawy River; but no soundings are obtained until within $1\frac{1}{2}$ miles or 1 mile of the shore. H. M. ships Leopard and Thames, steering eastward along the north side of the island, December 28th, 1790, saw a fine sandy bay near its N. E. part; they hauled in, had no ground 50 fathoms, about $1\frac{1}{2}$ and 2 miles off shore, but on approaching nearer got soundings. The Leopard anchored in 15 fathoms, with the extremes of the land bearing from E. by S. to the N.W. point of the bay N. N.W. $\frac{1}{2}$ W. The Thames anchored in 16 fathoms, coarse sand, and moored with the kedge, the extremes bearing from E. by S. to N.W. by N., the mouth of the river West, distant half a mile, which is a good berth, and convenient anchorage during the westerly monsoon. These ships remained here four days, wooded and watered conveniently with their launches in the river, and each of them was presented with a buffalo from the chief of the place.

The Dutch charts place a shoal stretching out from the east point of this bay, which ought to have a berth; a great swell rolls into the bay at times, during the Easterly Monsoon, in which season the anchorage here appears to be inconvenient.

South point of the island.

The southernmost point of Sandalwood Island is in lat. 10° 22′ S.,* lon. 120° 20′ E. by chronometer; and to the westward of this point there is a group of isles surrounded by shoals, which extend 3 or 4 leagues from the coast, consequently, dangerous to approach in the night.

Captain Ashmore, in 1822, after approaching the east end of the island, coasted along the northern side, to the westward, September 28th and 29th, and was carried close to the reef that lines the N.W. part, during a calm, and had a cast of soundings 31 fathoms, sand and coral. He made the western extreme of the island in lon. 119° $1\frac{3}{4}$′ E. by chronometers.

North coast of Flores.

THE ROUTE along the NORTH COAST OF FLORES is sometimes adopted by ships going from Sapy Strait towards Pitt Passage; it is also frequented by Dutch ships, bound from Batavia to Amboina, or Banda, late in the season, in March or April; likewise when returning in June, July, and August. Captain Forbes, of the Sibbald, bound to Amboina, after reaching Boele Comba, at the south part of Celebes, finding the currents running constantly through the Straits of Salayer to the westward, steered to the southward, on the west side of Salayer, then proceeded along the north coast of Flores, where, from the 17th to the 20th of April, 1816, the current was found to set to the eastward and north-eastward, while near this coast. When this route is to be followed, it is prudent to keep within a moderate distance of the coast of Flores, in order to avoid the islands and dangers to the northward. The westernmost of these are the SCHIEDAM ISLANDS, one of which, in lat. 7° 1′ S., lon. 120° 28′ E., has been mentioned in a preceding section, marked "Directions for sailing from China, outside the Philippine Islands, and through Pitt Passage into the Ocean." The other, or South-east Schiedam Island, is in lat. 7° 12′ S., lon. 120° 56′ E., by observations taken in the Boddam; they are both of considerable size, and may be discerned 7 or 8 leagues.

South-east Schiedam Island.

Schiedam Shoal.

SCHIEDAM SHOAL, on which the Dutch brig Mary Anne, Captain Martin, was wrecked in the night, March 9th, 1820, when proceeding from Batavia towards

* Captain White, of the Sherburne, in 1824, made the south point in lat. 10° 18′ S., lon. 120° 22′ E. In August, 1828, H. M. ship Satellite made the south point in lat. 10° 20′ S., lon. 120° 23′ E. by chronometer.

Amboina, was found to extend from East to West, 5 or 6 miles, and 3 or 4 miles from North to South, having rocks at the southern part a little above water: on the shoal observed lat. 7° 27′ S., lon. 121° 13′ E., the South-east Schiedam Island bearing from N.W. by W. ½ W. to N., distant 4 or 5 miles; Panjang, or South Island of the Kalatoa group, in sight from the wreck, bearing E. by N. A channel was found between the shoal and the South-east Schiedam Island.

Geo. Site.

Kalatoa and adjoining islands.

KALATOA* ISLAND, in lat. 7° 12′ S., lon. 121° 43′ E., by observations taken in the Boddam, distant about 15 leagues, eastward of South-east Schiedam Island, is of moderate height, and may be seen 7 leagues; it is the largest of a group of islands, having reefs projecting from some of them, and a shoal on which the Alfred struck in lat. 7° 9′ S., about 2 leagues off the N.W. part of Kalatoa, and near Great Crompa. The northern islands of the group are called Great and Little Crompa: the southern one, called Panjang or Madoo, lies close to the southward of Kalatoa, having a reef projecting a great way out from its western side, and there is a channel betwixt it and the south end of Kalatoa about 2 or 3 miles wide, with soundings in one part of 6½ to 12 fathoms, as experienced by the Boddam in passing through. About 6 or 7 leagues eastward of this channel lies a small island, called the Post Horse, having a reef extending about 1½ miles from its eastern side.

Caution.

As a caution to ships approaching these islands in blowing weather, it *may be* useful to describe the dangerous mistake of the fleet in 1796, which caused the unfortunate loss of the Ocean. This fleet worked out of the northern entrance of Allass Strait Jan. 31st, and cleared it at 4 P.M., then blowing hard at N.W., with much rain, which weather continued during the 24 hours. At noon, by indifferent observations, they were in lat. 7° 16′ S., lon. 119° 50′ E., having experienced about 60 miles of easterly current in 20 hours. From hence they steered N. E. 7 miles, and saw the North-west Schiedam Island to the eastward, about 4 leagues distant; hauled to the south-eastward and southward, to give a berth to it and the other Schiedam Island, which was afterwards seen: they were under close-reefed topsails at this time, the wind blowing hard at W. N. W., with rain and severe squalls, and unfortunately mistook the Schiedam Islands for the Postillions. From having the southern extreme of the islands bearing East at 5 P. M., they steered S. by E., S. E., and E. S. E., 21 miles, and E. N. E., N. E., and North, 24 miles, to round them, when at 2 A.M. land was seen N. N. E., very close. They immediately wore; but some of the ships perceiving breakers ahead, wore again, set courses, and continued working till daylight. The Alfred and Woodford struck, but fortunately backed off; the Canton, Boddam, and Taunton Castle, kept off the islands and reefs, by carrying a press of sail; but, not being able to round

* Kalatoa is of considerable size, and called Old Klaut by the Dutch; this and the neighbouring islands are inhabited by a perfidious race; after the loss of the Ocean, they continued for 14 days, daily, to promise Captain Patton their proas, to carry his crew to Amboina, having plenty of these vessels on the east side of the island. They appeared, however, only to wait a convenient opportunity to massacre the crew of the Ocean; but, fortunately, this was prevented, by keeping a strong guard and a good look-out in the night, and having some six-pounders mounted close by the tents. When Captain Patton was certain of the treachery of these people, he resolved to take some proas by force, but to pay a reasonable sum for the use of them, in transporting his crew to Amboina. With this view, an armed party was sent to the east side of the island, and in the act of seizing the proas, they were attacked by the natives, had 7 men killed and wounded; they killed about the same number of the Malays, but were obliged to return without the proas. A Macassar man was at the island at this time with some proas, who agreed to take part of the Ocean's crew to Amboina; and two days after the affray, Captain Patton, with his crew, embarked in the night in the proas and the Ocean's long boat, unperceived by the natives. They left this inhospitable island on the 19th of February, and arrived on the 28th at Amboina.

Madoo Island and the reef that projects from its western part, some of them were forced to push through betwixt that island and Kalatoa in the morning, and found the channel safe.

The Ocean was driven by the strong current on the reef lining the west side of Kalatoa, and unfortunately became a wreck before daylight, notwithstanding every effort was made to keep off, by carrying a press of sail. The reefs contiguous to these islands appear to be steep to, as no soundings were got, excepting a few casts in the channel, betwixt Kalatoa and Madoo.

To the southward of the Schiedam and Kalatao Islands there are two dangerous shoals, with some islands adjacent to the north coast of Flores, now to be described. Shoals to the northward of Flores.

BANGALORE SHOAL, or JAAGER REEF, lying a considerable distance off the N.W. part of Flores, appears to be in about lat. 7° 40′ S., although the true position of this danger is not correctly known. The ship Bangalore, bound from Amboina towards Allass Strait, struck upon this shoal at 9 P.M. April 12th, 1802; the anchor was carried out with a whole cable, but from the steepness of the coral bank, the anchor appeared only a-peak, and the ship soon bilged and became a wreck. At daylight the shoal was found to extend North and South about 3 miles, and in breadth 2 miles, dry at low water on the western part, with rocks resembling proas under sail. From the wreck on the shoal, Flores or Mangerye bore from S. W. to E. S. E. distant 10 or 12 leagues; an island near Flores, forming like a dome, S. S. W. 7 or 8 leagues; and an island, supposed Schiedam, N.W. 8 or 10 leagues. If this was the South-east Schiedam Island, the shoal seems to be about 18 miles to the eastward of it, by the bearing and estimated distance, or in about lon. 121° 13′ E.; whereas, if the island seen bearing S. S. W. was Rusa Raji, the shoal ought to lie about 7 or 8 miles to the eastward of its meridian, or in lon. 121° 46′ E.; the true situation of this danger is therefore very uncertain. Bangalore Shoal.

The Malays, who navigate hereabout, describe this shoal to be to the northward of Rusa Raji, which island is formed of a high gapped hill at the eastern part; but the western part, being rather low, is called *Cakke* or *Foot*, by these people, and it should not be sunk from an elevation of 10 or 12 feet (the height of their proas) in passing to the northward of the island, in order to avoid the before-mentioned shoal.

THE ANGELICA SHOAL was seen by the ship of this name, July 3rd, 1801, in her passage from Amboina, and the following extract is from Captain Don's journal:—"Saw a shoal bearing from S. by W. to W. N. W., bore up northward of it; on our approach, three proas at anchor on the shoal weighed and made sail. This shoal is about 4 miles in extent, of circular form, the north and south ends nearly dry; and it is in lon. 122° 18′ E., bearing from Kalatoa S. E. ¾ E., distant about 8 leagues." If the position of Kalatoa, by the observations taken in the Boddam, is correct, this bearing and distance would place Angelica Shoal in lat. 7° 35′ S., lon. 121° 58′ E.; but if the island seen was the Post Horse, mistaken for Kalatoa, which might *probably* happen, the shoal, in such case, would be in about lat. 7° 40′ S., lon. 122° 18′ E., agreeing with the position assigned to it by the Angelica. Angelica Shoal.

RUSA RAJI, called LUSARADY by the Dutch, in lat. 8° 17′ S., lon. 121° 38′ E. by chronometer, when bearing North about 4 or 5 miles distant, appeared bold to approach, of high, round, sloping aspect, covered with trees to the summit, and lights were seen upon it in the night: on either side this island the channel is equally safe, Rusa Raji.

but the S. E. part is lined by a reef, with a single tree on it. The frigate Maria Reygersbergen, from Batavia, made it in lat. 8° 14′ S., lon. 121° 39½′ E. by chronometer.

The Sibbald passed northward of it, April 19th, 1816, and made it in lat. 8° 18′ S., lon. 121° 38′ E. by chronometers. At noon, 18th, the observed lat. 8° 7′ S., lon. 121° 17′ E., when the centre of Rusa Raji bore S. S. E., distant 7 or 8 leagues, and a remarkable peak or smoking volcano on Flores S. by W. At noon, 19th, the observed lat. 8° 7′ S., lon. 121° 53′ E. by chronometer, when the body of Rusa Raji bore S. 50° W., distant about 6 leagues, and the body of Rusa Linguete E. ½ N., which bears from the former N. E. by E. ¼ E.; same time saw land bearing about N. by E., supposed to be the island Madoo, where the Ocean was lost, or the Port Paart of the Dutch.

The Castlereagh, Captain Gardner, from Bombay, proceeding by the route along the north coast of Flores, in December, 1808, passed between Rusa Raji and the coast of Flores, in a fine channel, about 4 leagues wide, but got no soundings; when in lat. 8° 8′ S., lon. 121° 12′ E. by chronometer, at noon, Rusa Raji was then in sight bearing E. by S. ½ S.

Rusa Linguete.

RUSA LINGUETE, called ROSAGALET by the Dutch, in lat. 8° 5′ S., lon. 122° 0′ E.,* the centre, by the Sibbald's chronometers, and in lon. 122° 6½ E. by the Maria Reygersbergen's chronometer from Batavia, is of considerable height and extent, having the appearance in some views of a saddle; off its N. E. part lies a small island, and from the S.W. and south part a dry sand and reef project about 2 miles, or upwards. The Castlereagh, after passing to the southward of Rusa Raji and Rusa Linguete, had the latter bearing North at 2 A.M., distant about 2 leagues, and from hence steered N. E. ¾ N. 16 miles till daylight, when Rusa Linguete bore W. by S. ½ S. and Flores Head E. ¼ S.

Directions.

The Sibbald passed on the north side of these islands, the channel outside being equally safe as that between them and Flores; but the inner channel seems preferable in the night, on account of Bangalore and Angelica Shoals. Ships, however, which sail along the north coast of Flores in the night, ought not to borrow on it too closely on account of several small islands, stretching along it nearly from Flores Head westward, and opposite to Rusa Linguete; among which the Three Bastards, and Duffer or Forsaken Island, lie, in lat. 8° 14′ and 8° 16′ S., and 7 or 8 leagues westward of Flores Head, by observations taken in the frigate Maria Reygersbergen.

Three Bastards, Forsaken Island, and Passeleurang Reef.

The Dutch colonial schooner Calypso was wrecked on a reef called PASSELEURANG, April 28th, 1824, which is said to lie about 5 miles S. W. by W. from Rusa Linguete. She left Amboina April 18th, bound to Batavia, and had adverse winds several days before she struck at midnight on the reef: part of the crew were saved in the boats, but were afterwards made prisoners by the pirates, and ultimately released by the intercession of the Rajah of Bonerate, excepting three Europeans and six Javanese. Ships passing between Rusa Raji and Rusa Linguete, or in approaching the latter bearing north-eastward, ought to be on their guard to avoid the Reef of Passeleurang.

Flores Strait.

FLORES STRAIT is bounded on the west side by the eastern part of the island Mangerye or Flores, and on the east side by the islands Solor and Adenara, or Sa-

* The Castlereagh supposed it to be in lon. 122° 26′ E. when passing in the night, which appears to be too much easterly. Both it and Rusa Raji are inhabited.

braon; it extends nearly N. N. E. and S. S. W. 10 or 12 leagues. The south entrance, formed between the island Solor and the S. E. part of Flores, is sometimes called the Strait of Lobetobie; and the northern entrance, formed betwixt the island Adenara and N. E. part of Flores, is called Larantuca Gut by the Portuguese: they had formerly a settlement of this name at the foot of the adjoining high mountain.

In some parts of the strait, where a ship may occasionally anchor, the bottom is in general rocky; and the tides being very rapid in the northern entrance, which is very contracted, large ships ought not to pursue the route through this strait, except in a case of necessity. A fleet of six ships,* bound from Europe to China, did however pass through it in 1797-8, from the journals of which the following remarks are chiefly taken; particularly from the observations made by Captain Williams, of the Thames.

The South entrance of Flores Strait, in lat. 8° 40′ S., lon. 123° 3′ E., cannot be mistaken by any person who has previously seen it. Captain White, of the Sherburne, in 1824, made the Rocky Islet at the entrance of the strait in lat. 8° 38′ S., lon. 122° 58′ E. by chronometers. South entrance.

A stranger intending to proceed into this strait during the Westerly Monsoon should, after passing Sandalwood Island, haul in for the coast of Flores, and approach it pretty closely when within 5 or 6 leagues of the entrance of the strait.

This part of Flores consists of a chain of high mountains, and in coasting to the eastward, a high round isle will be discerned directly in the mouth of the strait, which must be passed on the west side. This isle is steep to, having no ground near it at 90 or 95 fathoms; a little eastward of it there is a ledge of rocks, generally called Sunken Rocks, part of which is visible above water; and other islets and rocks front the south end of Solor eastward of the strait. At a small distance inside the high round isle, or outermost isle, two other rocky islets form the passage, which are seen when the strait is open: they bear E. N. E. and W. S. W. from each other, distant half a mile or more, and soundings of 40 to 30 fathoms were obtained by the fleet, when passing in mid-channel between them; the common passage, however, is on the east side these two islets. Rocks. Sailing Directions.

Flores South-east Point, forming the west side of the southern entrance of the strait, is remarkable, being of green aspect, and resembling a gunner's quoin; the point is at the foot of the high volcanic mountain of Lobetobie, which may be discerned at a great distance, and is generally seen burning in the night. A reef projects a considerable way from the green point of Lobetobie, with 9 fathoms water close to it according to the Dutch charts: it ought to have a wide berth, and the lead should be kept going.

After passing the two inner islets, the fleet carried soundings from 40 to 27 fathoms, decreasing regularly toward the shore; and in the evening, when 4 or 5 miles inside the islets, they hauled in for the Solor side of the strait, and anchored in from 15 to 35 fathoms, coarse sand, shells, and coral. The Glatton, in 28 fathoms, had the Middle Isle in the south entrance of the strait bearing S. by W. ½ W., the other two about equal distance on each side, volcano of Lobetobie W. ½ S., and the high mountain of Larantuca N. ½ E.; observed lat. 8° 30′ S. by the Glatton, 8° 32′ S. by the Carnatic, and the tide set regularly N. by E. and S. by W. about 2½ miles per hour. In attempting to land on Solor, the natives were found hostile, firing some arrows from the bushes at the boats; but they *probably* believed the ships to be Dutch, who are said to carry away the inhabitants when opportunity offers, to sell as slaves at Batavia.

* Glatton, Buccleugh, Carnatic, Thames, Walmer Castle, and Royal Charlotte.

From the above anchorage, the fleet weighed at noon, December 26th, 1796, steered N. E. by N. and N. E. $\frac{1}{2}$ N., in soundings of 25 to 35 and 40 fathoms; then no ground, until they hauled in to anchor, near the eastern or Adenara shore, where they got 26 fathoms about three-quarters of a mile off, decreasing fast to 20 and 18 fathoms.

The Glatton anchored in 17 fathoms, Larantuca Peak N. W. by W.; centre of the northern entrance of the strait N. N. E.; the low point of Larantuca shore, which forms the passage, N. by E. $\frac{1}{2}$ E.; Point of Adenara, which has coco-nut trees to the water's edge, N. E. by N., 3 or 4 miles distant; Adenara south point S. by W. 3 miles; and the N. W. point of Solor, which forms the south side of the strait of that name, S. S. W. This is a small bay, where the fleet anchored in bad ground, for the bottom is mostly coral rock and coarse sand: the tides were found weak, with eddies near the shore; but farther out in the stream, they set N. N. E. and S. S. W. from 4 to 6 miles per hour, and the rise was 8 or 9 feet. The middle of the bay is the best ground, for two ships of the fleet lost anchors by the rocky bottom, and this occasioned the loss of bowsprit and other damage to the Buccleugh, the Walmer Castle driving foul of her. This accident detained the fleet here until January 4th, 1797. The Glatton's boat found 8 fathoms water close in shore abreast the ship; but a shoal spit projects from the point about three-quarters of a mile to S. E., with only 2 fathoms on it about 1 or $1\frac{1}{2}$ cable's length off shore.

Tides.

Larantuca Village.

Larantuca Village, on the opposite shore of Flores, can supply two or three ships with refreshments, such as goats, hogs, fowls, fruits of various kinds, a few buffaloes, and some turtle: fresh water may also be procured from wells here, and near the mouth of the gut. In return for these articles, the natives will receive gunpowder in small quantities, musket-balls, glass bottles, wine-glasses, white linen cloth, and all sorts of coarse cutlery. They collect here small quantities of wax, bezoar, and ambergris, which are sent in small proas to Timor and other places, and purchased by the Chinese traders.

The inhabitants of this village generally hoist a Portuguese flag, and may *probably* accompany it with an English jack, when any of our ships are passing through the strait. They, as well as the inhabitants of the village of Adenara, profess Christianity, having been converted by the Portuguese missionaries, above a century ago.

Anchorage.

The anchorage in Larantuca Road, in 15 or 16 fathoms, about 1 or 2 cables' lengths off shore, and southward of the village, is thought to be safer than the anchorage on the Adenara side, but the bottom is generally coral and sand throughout the strait.

Strait of Solor.

On the west side the strait there are two bays, with an island in each, and the Strait of Solor is formed on the eastern side, betwixt Solor Island and Adenara, which is a passage of 3 or $3\frac{1}{2}$ miles wide, leading to the Dutch Gut. There are soundings in this passage, by keeping towards the north side of Solor, but a spit projects from its N. E. point: and when the shore is closely approached, there are overfalls from 4 to 9 fathoms. Large Dutch ships sometimes adopt this passage, after coming into the south entrance of the Strait of Flores, and proceed northward through the Dutch Gut. The Jane, after passing along the north coast of Flores, entered Flores Strait from the northward, passed through Solor Strait, and then southward between the islands Solor and Lomblen, in April, 1706, on her route to Timor.

All these islands being high and mountainous, ships passing through the straits formed by them are subject to alternate calms, and strong sudden gusts of wind of short duration.

From the above anchorage, near Larantuca, the fleet weighed about noon, January

4th, 1797, with the first of the flood, which is the best time to weigh: having a light breeze at S.W., they drove through Larantuca Gut under top-sails, with boats ahead towing, keeping nearly in mid-channel, or rather nearest the eastern shore. The soundings in passing through were from 17 to 20 fathoms, but some ships nearest the shore had only 10 fathoms. Larantuca Gut.

The tides are very rapid, and set nearly direct through the gut, which is only half or three-quarters of a mile wide. It appears dreadful to strangers, although the channel seems safe, and there are 7 fathoms water close to the point on the eastern side; yet, considering the rapidity of the tides in this very contracted channel, it seems not an advisable passage for large ships.

Ships from the southward, approaching the outer point, seen on the Flores shore, should be careful to haul over to the eastern side of the gut in passing that point, because the tide setting strong round it will be liable to horse them into the bight of the Flores shore, outside the point, which is shoal all over.

Adenara Village stands on the N.W. side the island of this name, a little way outside the gut of Larantuca. Refreshments and grain for stock may be procured here; ships coming from northward may steer for, and anchor off this village, where they can get out the boats, and take every precaution requisite, before they proceed into the gut. Adenara Village.

To the N.W. of Adenara, on the west side the channel, leading to the gut, and nearest to Flores shore, is the small low island of Serbette, which ought to have a good berth on account of surrounding shoal spots, some of which are dry. When this island bore N.W. by W., the village of Adenara bore S.E. by S., distant 3 or 4 miles, and Pulo Comba N.E. ½ E.

PULO COMBA, or CAMBAY,* is a high, round island, about 2 miles in extent, bearing N.E. ½ E. from the north entrance of Flores Strait, distant 11 or 12 leagues, and nearly North from the Dutch Gut. Captain Heywood made it in lat. 7° 49′ S., lon. 123° 41′ E., or 4° 34′ West from Amboina Flagstaff by chronometers. It is an excellent guide for ships coming from the Banda Sea, when bound through the Strait of Flores, or along the north coast of this island, and may be passed on either side at any convenient distance, being bold to approach; ships ought, however, to pass it on the east side, in steering for the strait during the Easterly Monsoon. Pulo Comba.

ZEMANRO GUT, formed between the N.E. part of Solor Island and the S.W. end of Lomblen, is 3 or 4 miles wide, and seems to be a safe passage. On the east side the entrance there is an islet, called the Devil's Rock, with some shrubs on it, about three-quarters of a mile from the S.W. point of Lomblen; a hole is seen through it, when bearing N.W. ½ N. or N.W. by N. The northern part of this passage, called the Dutch Gut, formed between the N.W. end of Lomblen and the eastern part of Adenara, has been already mentioned in describing the Strait of Flores. Islets and shoals project from the N.E. point of Adenara, and bound the west side of the channel in passing out to northward. There are soundings in some parts of the Zemanro and Dutch Guts; but although this passage is said to be frequented by large Dutch ships, it is little known to English navigators, the Jane being the only ship of this country known to have passed twice through Zemanro Gut in her route to and from Timor. Zemanro Gut. Dutch Gut.

* Called North Hattery by the Dutch frigate Maria Reygersbergen, which she places in lat. 7° 58′ S., and 48 miles East of Flores Head; and another island, situated at the entrance of the Dutch Gut, called South Hattery by this ship, she made in lat. 8° 7′ S., and 19 miles East of North Hattery by chronometers.

The N. E. point of Solor and S.W. point of Lomblen, which form the Gut of Zemanro, bear N. ½ W. and S. ½ E. from each other, distant about 2½ leagues.

Lomblen Peak.

LOMBLEN is an island of considerable extent N. E. and S.W., consisting mostly of high bold land; the high conical peak at the N.W. part, which may be seen 16 or 17 leagues, is in lat. 8° 12′ S., lon. 123° 52′ E. by chronometer from Amboina. The south coast extends nearly East and West about 5 leagues, and both the north and south coasts seem bold to approach.

Alloo Strait.

ALLOO STRAIT, bounded by the Island Lomblen to the N.Westward and westward, and by Pantar to the eastward, is thought to be a safe passage, but destitute of soundings. It is frequented by the junks and vessels which trade from Macassar to Timor, and by those also that trade from Macao to the same place. Dampier passed through it in 1688, and again in 1700; but being little known to English navigators, the following remarks, which were communicated by an able and experienced naval officer,* may be useful.

N.E. point of Pantar.

PANTAR ISLAND, extending N. E. and S. W. about 8 leagues, is of considerable height, having a peak at the eastern part somewhat elevated above the rest of the island. The N. E. point is in lat. 8° 10′ S., lon. 124° 25′ E. by chronometer from Amboina, and the land westward indents into two small bays between it and the N.W. point, which forms into a little peak. About 3 or 4 miles N. by E. from the N.W. point of Pantar there is a small round isle, called Green Island, remarkable by its colour, and being destitute of trees. FLAT ISLANDS, about 2 or 3 miles westward of it, are two low isles, with some straggling bushes on them; they lie north and south near each other, and seem connected by a spit of sand or rocks. The north entrance of the Strait of Allo, formed between these islands and the east point of Lomblen, is here 5 or 6 miles wide: this point, in lat. 8° 14′ S., lon. 124° 0′ E. by chronometer from Amboina, forms in a low spit of sand, with a reef or coral bank projecting under water about half a mile from it; at the distance of one mile off it no ground was got with 120 fathoms line. About 5 or 6 miles South from this point, East Island is situated, nearest the Pantar side of the strait, and has a level aspect. MIDDLE ISLAND, bearing S. W. by W. 5 or 6 miles from East Island, is of considerable height, resembling at the western part a gunner's quoin: the passage on either side this island appeared safe, and is about 4 or 5 miles wide from shore to shore; but the opening between East Island and Pantar seemed very narrow.

East point of Lomblen.

Pantar Strait.

PANTAR STRAIT, formed betwixt the island of this name and the west end of

* Captain Heywood sailed from Amboina late in February, 1803, in H. M. ship Dedaigneuse, bound to Hindoostan. He stood S. Westward, made Velthoen Island, and entered the Strait of Alloo with a leading wind, March 3rd, with the intention of proceeding through it. Having rounded the east point of Lomblen, about a mile distant, and got into the channel betwixt East Island and Lomblen, he meant to have passed along the Lomblen side of the strait, to the westward of Middle Island; or to the eastward of the latter, if laid off by the wind. But as night approached, the wind veered to S.W. with squalls and rain, and having a brig in tow, he thought it highly imprudent to beat about in a dark night, in an unexplored narrow strait, probably subject to strong tides; he therefore steered out of the strait, and proceeded round the north and east sides of Ombay, then to the S. W. betwixt it and Timor. He thus concludes his remarks on the Strait of Alloo:—" With a leading wind, I have no doubt that the passage through this strait is perfectly safe, and I should prefer it to the Strait of Pantar at this season, being farther to windward, much wider, and the land on each side not so high; consequently, less liable to calms, squalls, and irregular currents of wind and water." Captain Heywood took many angular bearings whilst in the vicinity of the straits and islands, and constructed a chart of them.

Ombay, extends N. N. E. and S. S. W. about 8 leagues, and is little frequented by English navigators; for it is considered to be rather intricate, and not so safe for large ships as the Strait of Alloo. From the observations made by Captain Heywood, when passing the northern and southern mouths of this strait, he has been enabled to give the following remarks.

The N. West end of Ombay, in lat. 8° 9′ S., lon. 124° 27′ E. by chronometer from Amboina, is high bold land, and the distance from it to the N. E. point of Pantar is about 5 miles; but in the northern part of this strait, three islands are situated. The northernmost of these, called North Island, is low, and on the middle of it there is a small hummock. Haycock Island, bearing S. ½ W. from the former, rises upward in the form of a cone or haycock; and the other, called High Island, or Centre Island, is much larger and nearly of the same form, but terminates in a double peak, as high as the west end of Ombay or the peak of Pantar. The north part of High Island is distant about 2 leagues southward of North Island; it is situated rather nearer the Pantar side than to Ombay, and the land abreast of it forms a bay on both sides the strait. There is a deep inlet to N. E., which apparently separates the N. W. part of Ombay from the body of the same land. South Island, in the southern entrance of this strait, is high, and seen to the westward of High Island, when it bears S. 11° W. The proper channel through is betwixt the islands in the north part of the strait and the Ombay shore, and out to the southward on either side South Island, but the passage West of the latter is preferable. N.W. end of Ombay.

The narrowest part of the channel, between the N. E. point of High Island and the north point of the inlet that stretches into Ombay, is nearly 2 miles wide, and it becomes wider to southward. Captain John Wales, of the Company's Marine, went through this strait in 1798; he passed close to the N.W. part of Ombay, which is lined by a reef, and carried a fair wind until abreast of High Island: then succeeded light baffling airs from southward, and night coming on, he worked through betwixt Ombay and High Island; when 3 or 4 miles southward of the latter, the S. E. wind set in steady, with which he steered out S. S. Westward, between South Island and the Pantar shore. No ground was got with from 20 to 40 fathoms of line in passing through the strait, and strong eddies were experienced off the S. E. part of High Island.

OMBAY, or MALLOOA, extends nearly E. by N. and W. by S. about 16 or 17 leagues, and from the numerous dwellings seen among the hills, it appears to be well inhabited. This island is high land, but mostly so at the eastern part; its coasts all round appear bold and safe to approach, and the east point is in lat. 8° 17′ S., lon. 125° 15′ E., or 3° 0′ West from Amboina by chronometers. Ombay.

WETTER, or WETTA, is a high bold island, extending E. N. E. and W. S. W. about 20 leagues; it is clear of danger, and safe to approach within 1 or 2 miles in most places. Its east point is in lat. 7° 46′ S., lon. 126° 54′ E.: Dog Island is in lat. 7° 41′ S., lon. 126′ 3′ E., or 2° 12′ West from Amboina by chronometers, and is a small isle, about 2 miles off the N.W. end of Wetter. Pulo Baby, in lat. 8° 5′ S., distant about 5 miles off the S. W. end of Wetter, is a high island, bold to approach on the west side; but the passage betwixt it and Wetter is said to be unsafe, and the western shore of the latter, being lined by foul ground as far northward as Dog Island, ought to be kept at a moderate distance. Wetter, and adjoining islands.

PULO CAMBING, or PASSAGE ISLAND, extending N. N. E. and S. S. W. Pulo Cambing.

about $3\frac{1}{2}$ or 4 leagues, is of considerable height, with a peak; its north point bears S. S.W. $\frac{3}{4}$ W. from Pulo Baby, distant 2 leagues, and the channel is clear between them, by giving a berth to the north end of Pulo Cambing, off which foul ground projects about one mile. The south point of this island is in lat. 8° 21′ S., lon. 125° 39′ E. by chronometer from Amboina; and its S. W. point bears East from the east end of Ombay, distant about 20 miles, this being the breadth of the Ombay Passage, formed between them, which is clear of danger, the islands on both sides being steep to, without soundings.

Kissa.

KISSA, in lat. 8° 0′ S., lon. 127° 7′ E. by chronometer from Amboina, is a small island, distant about 7 leagues N. N. W. from the east end of Timor, and nearly the same distance S. Eastward of the east end of Wetter. Lieutenant Kolff, in the Dutch brig of war Dourga, anchored off the village of Sau, on the south coast, in 50 fathoms water, about a cable's length from the shore, in a small bay, where he was tolerably sheltered from S. E. winds. There is also an anchorage on the west side of the island, and a vessel intending to call there during the South-east Monsoon should stand close o the S. W. end of the island and then run along shore to the northward, anchoring close round the S. W. point. The depths, however, are very irregular, and the bottom rocky. There is a small village on the shore of the bay, and a walled town 2 miles inland. The bay is in lat. 8° 14′ S., lon. 127° 8′ E.

Roma.

ROMA lies about 23 miles N. N. E. of Kissa, and is an island of considerable size and height, with several small isles contiguous; there is said to be anchorage at the S. E. part, in a small bay under the high land, which forms a kind of harbour, being protected by the small islands that front the eastern side of Roma. The Dutch brig of war Dourga anchored in 7 fathoms, on a bank of sand which extends half a mile to the northward from Nusa Midta, an islet lying off the south end of Roma, from which it is separated by a strait about 3 miles wide. In the North-west Monsoon the best anchorage is under the lee of Roma, opposite Nusa Midta. There is also said to be anchorage on the N.W. side of Roma.

Timor.

TIMOR extends about 80 leagues nearly N. E. by E. $\frac{1}{2}$ E. and S.W. by W. $\frac{1}{2}$ W., the S.W. point being in lat. 10° 23′ S., lon. 123° 30′ E., and the east end in lat. 8° 21′ S., lon. 127° 15′ E., or 60 miles West of Amboina Flagstaff by chronometers.* This island is formed of high undulating mountains in the interior, but in some places near the sea it is of moderate height. The south coast, although little frequented, is safe to approach within a moderate distance in most places, with soundings usually near the shore, and anchorage in some of the bays. In coasting along this side the island during the night, keep at a moderate distance from the points of land, as several of those fronting the S. Western and southern parts have reefs projecting from them; and do not stretch far out to southward, on account of the Sahul Banks, described in Volume First of this work.

To sail southward in the Westerly Monsoon.

In the Westerly Monsoon a ship coming from Amboina or any other part of the Banda Sea, and bound westward by the southern passage, ought to use every means to pass on the north side Timor; for if she fall to leeward, and be obliged to pass round the east end of that island, she will find great difficulty in beating westward, betwixt it and the coast of Australia; where strong winds from W. N.W. to W. S.W.,

* The geographical positions of most of those Islands are given from the observations of Captain Heywood, corroborated by those of Captain Flinders and other navigators.

with squally weather and a heavy sea, usually prevail from November to April. If a ship unavoidably fall to leeward, work westward along the south coast of Timor, and afterwards pass through the Strait of Semao, betwixt it and Rotto; for by keeping to the northward of the Sahul Banks, near the land, a ship will *probably* have the wind and sea more moderate than in the offing; and she will not be embarrassed with dangers to the southward.

The south coast of Timor stretches nearly N. E. by E. and S.W. by W., and is generally formed of low land near the sea, the hills from thence rising in gentle acclivities into the interior. Both the high and low land are mostly covered with trees close to the sea, except in some parts, which appear cultivated. Several ships, in sailing along this coast, have usually found it safe to approach, with many small inlets, and soundings of 15 to 25 fathoms within 1 or 1½ miles of the shore in several places. South coast of Timor.

The south side of Timor is inhabited, and the natives are generally found inoffensive, and more hospitable than the northern Malays. On the opposite side the island, there are Dutch and Portuguese settlements, affording refreshments for ships.

Delli, or Dilly, in lat. 8° 35′ S., lon. 125° 40′ E., or 2° 35′ East from Amboina by chronometer, is a small Portuguese settlement, on the north side the island, where ships proceeding through the Ombay Passage sometimes stop for supplies. Delli.

From the low situation of the town under the high land, it is with difficulty perceived until nearly approached, when coming from the northward. To the eastward of it there is a bluff projecting point, by which it may be known when within 4 or 5 miles of the shore; or at this distance off, with the peak of Pulo Cambing bearing N. ½ E., the houses and flagstaff will be visible.

The inner road or harbour should not be entered by large ships, unless from necessity; for the entrance is only about 1½ or 2 cables' lengths in width, and is formed between two coral reefs; inside there is not much room. The sea breaks on these reefs at three-quarters ebb, and they are dry at low water, stretching parallel to, and distant about 2 miles from the shore. In crossing the bar between them, the Canada had 5, 6, and 7 fathoms, and 14 fathoms inside, about a cable's length off the town, with the extremes of the bay from W. N.W. to N. E., and the extreme of the coral reef that shelters the harbour N. N.W. ½ W. Inside, there is a small patch nearly in the fair way or centre of the harbour, having on it only 12 feet water. The Princess Charlotte* grounded on this patch, after the pilot anchored her in 7 fathoms about a quarter of a mile off shore, with Delli Flagstaff S.E. ¼ E.; being too far westward, she shot ahead and grounded, but was soon hove off by running out the kedge anchor. Anchorage.

At a moderate distance outside the reefs there is anchorage, from 30 to 40 fathoms. Pilots will come off, on your making the signal, if you intend to run inside. The passage between the reefs is to the westward of the fort, near the western point of the bay; the instant a ship hauls round the reef, sail should be reduced, and she will shoot into an anchoring berth of 12 to 14 fathoms, muddy bottom. There is a large tree on the beach; which should not be brought more easterly than S. E. by S. From the proper anchorage, Pulo Cambing bears N. 9° E. to N. 14° W., Pulo Baby N. 16 E., west end of Wetter N. 23° E., Flagstaff of Delli S. 59° E., and the extremes of the bay from N. 45° E. to N. 73° W.

* This ship left Amboina, June 16th, 1802, bound to Europe, and being very crank, put into Dilly 20th; here she remained 7 days, received 72 tons of ballast and 10 buffaloes. She made Dilly Flagstaff in lat. 8° 34½′ S., lon. 125° 36′ E. by chronometer from Amboina, or 4 miles more westerly than Captain Heywood's position of it by the same means.

Fine buffaloes, hogs, and vegetables, may be got here, also rice and poultry; but the latter are neither cheap nor abundant. The sea wind setting in regularly during the day, renders this place easy of access in the South-east Monsoon; and a ship may run out speedily with the land wind in the morning. The tides are irregular in the neaps, high water at $1\frac{1}{2}$ hours on full and change of moon.

About 9 leagues West of Delli there is a point of land in lat. 8° 39′ S., lon. 125° 13′ E., which forms the narrowest part of the passage between Timor and the S. E. part of Ombay, which is here 5 or $5\frac{1}{2}$ leagues wide. From this point the general direction of the coast is between S. W. $\frac{1}{2}$ W. and S. W. by W. $\frac{3}{4}$ W. 26 or 27 leagues to Pulo Batto, a small isle with white cliffs in lat. 9° 16′ S., lon. 124° 5′ E.; it lies 3 or $3\frac{1}{2}$ leagues off shore, and sometimes abounds with turtle.

Pulo Batto.

There are several villages and anchoring places on the north coast of Timor, betwixt Delli and Pulo Batto; but in many parts, no ground can be got until very near the shore.

Batto-Gady.

Batto-Gady, in lat. 8° $57\frac{1}{2}$′ S., lon. 124° 55′ E., is a Portuguese settlement, where refreshments may be got, with good anchorage in the Easterly Monsoon. There is a rock fronting this place, with soundings near it. The Star, bound from Amboina to Europe, anchored when calm in 15 fathoms, with Batto-Gady flagstaff in one with the rock bearing S. S. W., 2 or 3 miles distant. With a light westerly breeze soon after she weighed, made a tack, and stood in S. by W. $\frac{1}{2}$ W. for the town; then anchored in the road in 11 fathoms, sand and mud, with the bluff point N. 24° E., the rock N. 32° E., the western extreme W. 17° S., and the flagstaff of Batto-Gady S. 35° E.; off the beach abreast the fort about 200 yards. She remained here three days cutting wood, filled up her water, and procured some stock by permission of the governor, and sailed August 13th, 1801.

Leffouw Road.

Leffouw Road, about 8 leagues eastward of Pulo Batto, is an open anchorage, and the low point on the west side separates it from Tulycaon Road, or Bay. In this bay, near the Village Occuse, a ship may anchor in 22 fathoms, about 2 cables' lengths from the shore, with the houses bearing nearly South, Leffouw Point about 2 miles E. N. E., and Pulo Batto 6 leagues to the westward. It appears to have been in Tulycaon Bay that the Taunton Castle anchored, September 1st, 1797, and sailed on the day following, after receiving 15 buffaloes and other refreshments. She anchored in 40 fathoms, about 2 cables' lengths off shore, with the extremes of the bay from E. by N. to W. by S. $\frac{1}{2}$ S., the flagstaff S. $\frac{1}{2}$ E., observed lat. 9° 12′ S. The ship Prince Regent, April 6th, 1816, sent two boats twice to the village of Occuse in passing, and they brought off 18 fine buffaloes and some water, while the ship stood off and on. There is good anchorage westward of the village, 50 fathoms about 2 miles off shore, and 25 fathoms one mile from it, blueish clay.

Tulycaon Bay.

Sutarana Road.

Sutarana Road, round the point S. Westward of Tulycaon Bay, is rocky and foul ground; the anchorage is in 30 to 40 fathoms about $1\frac{1}{2}$ cable's length off shore, with the houses bearing S. by W., Pulo Batto N.W. westerly, $2\frac{1}{2}$ or 3 leagues, easternmost extreme N. E. by E., and the western extreme of the bay W. $\frac{1}{4}$ S., distant $1\frac{1}{2}$ miles.

The north coast of Timor is uniformly high a little way in the country, sloping down in many parts towards the sea. In lat. 9° 41′ S. is a remarkable peak, on the west part of the island, which bears S. by E. a little easterly from Pulo Batto.

Currents and monsoons.

The currents are very irregular, and sometimes set strong through the channel betwixt Ombay and Timor, but generally to the eastward during the Westerly Monsoon, and to the westward in the opposite season. Close to the shore of Timor a kind of tide is sometimes experienced. In April and May the current sets commonly west-

ward, and if leaving Amboina in April, steer direct for Pulo Cambing, as the current will set you S. Westward; but it frequently sets strong to the eastward about the latter part of the Easterly Monsoon, in July, August, and September. In October it sometimes sets strong westward, for in October, 1813, the Albion could not get eastward on account of a westerly current, and she was obliged to pass through the Strait of Flores to the northward. The sickly season here is during the Easterly Monsoon, when strong land breezes prevail in the night.

The N.W. point of Timor, in lat. 9° 24′ S., lon. 123° 55′ E., is distant 4 or 5 leagues S.W. of Pulo Batto; and the coast from thence turns sharp round S.S.W. and South, extending nearly in these directions to the entrance of Copang Bay, having a small bay in the interjacent space. N.W. point of Timor.

Copang, or Coupang Bay, near the S.W. extremity of the island, is very extensive, and the town of Copang, built on the south side of it, is the chief settlement on Timor belonging to the Dutch; here they have a fort called Concordia. Copang Bay.

There are two passages into the bay, both of which are safe, and lead to the anchorage. The western passage is formed betwixt Semao Island and Sandy or Turtle Island, which is a small isle in the middle of the entrance of the bay, having a sandy beach and a reef projecting from its western side 2 miles W.S.W. The sea breaks on this reef, and it is partly dry at low water; the island has also a reef stretching from it about half a mile to the northward and southward, with 30 fathoms close to its eastern verge.

To sail in by the western channel, borrow towards the Semao shore, or by keeping about mid-way between it and Sandy Island, the reef which projects from the latter will be avoided. When abreast of this island, steer directly for the town of Copang, but no soundings will be got until within 1½ miles of it. To enter it by the western channel.

The eastern channel is formed between Sandy Island and a small isle covered with trees, which lies close in with the N. E. point of the bay; this is considered the best channel, there being soundings between the islands of 25 to 38 fathoms, where a ship may anchor occasionally during a calm.

In steering S. Eastward for this channel, soundings of 60 fathoms, sand and coral, are obtained, when Sandy Island is bearing S. S. E., distant one mile, and the small isle E. N. E. 3 or 4 miles, the depths decreasing towards the latter. About half a mile farther in, there are 50 fathoms, sand, and 38 fathoms about half a mile from Sandy Island; come no nearer it on account of the surrounding reef. Steering in to the eastward of this island, Copang flagstaff will be seen bearing about South, and in sailing towards it, the water will deepen from 32 to 47 fathoms, soft mud. When the fort is approached within 1½ miles, the depths will decrease to 39, 31, 29 fathoms, sand, and 21 fathoms, mud, as fast as the lead can be hove, where a ship may anchor, with the flagstaff S. S. E. ½ E. one mile, the river's mouth S. S. E. ¼ E., Sandy Island N. ½ W. about 4 miles. But the anchorage is better with the flagstaff S. by E., in 20 to 25 fathoms, blue mud, about half a mile off shore, and it is proper to moor immediately. The Moffat touched here in 1818, and Captain Lee, of that ship, states the best anchorage to be with the flagstaff to the westward of South: she anchored, December 12th, in 24 fathoms, with the Fort Flagstaff S. by W., Turtle Island N. by W. ¼ W., Semao Passage S.W. by W. ¼ W., about 2 miles off the town. To sail in through the eastern channel.

Fort Concordia is in lat. 10° 8½′ S., lon. 123° 35′ E. by chronometer from Amboina, and Captain Flinders made the flagstaff in lat. 10° 9′ S., lon. 123° 35¾′ E. Variation 0° 37′ E. in 1803:* although there is very little stream of tide in the road, Fort Concordia. Tides.

* Variation, by Captain Owen Stanley, R.N., in 1839, 1° 53′ W.

it rises 10 or 12 feet perpendicularly, and flows till $10\frac{1}{4}$ hours at full and change of moon.

Refreshments. By application to the governor, a ship may get every assistance here, and refreshments of fruits, vegetables, buffaloes, hogs, and poultry. Boats go into the river, and fill their casks above the bridge, where the water is always good, but it is sometimes brackish below it.

This is a safe place to touch at in the Easterly Monsoon; but the bay is open to the heavy swell, which rolls in during the strength of the Westerly Monsoon, rendering the anchorage sometimes unsafe. Ships may, however, anchor under Semao, completely sheltered from the severe squalls which blow from N.W. to S.W.; here Dutch ships anchor during the strength of the Westerly Monsoon, but the bottom is generally foul. There is also anchorage on the north side the bay, under a small island, called Pulo Tekoos, where vessels are sheltered from N.W. winds.

Semao. SEMAO is an island of considerable extent, moderately elevated, fronting Copang Bay and the S.W. end of Timor, from which it is separated by a narrow navigable channel, having soundings of deep water. The island has a similar aspect to the adjacent land of Timor, although less elevated.

Rotto. ROTTO, or ROTTI, extends a considerable way S. Westward of Timor and Semao, being 12 or 14 leagues in length N. E. and S.W.; the S.W. end reaching to about lat. 11° 2′ S., lon. 122° 55′ E.; it is of moderate height, with undulating hills, much larger than Semao, and may be seen 12 or 14 leagues distance. In some parts, soundings are got near its shores, which have small isles adjoining; and at the western part a Dutch manuscript chart places a harbour or inlet, extending inland to the eastward, the entrance of which is formed by shoals on each side, and seems intricate; but 4, 5, and 6 fathoms are marked between the shoals, and 8 to 13 fathoms inside the harbour, secure from all winds. This island, which is under the jurisdiction of Copang, is well inhabited, divided into 18 districts, or Rajahships, and said to produce sugar, and some other articles of trade.

Booca Bay. Booca Bay, in lat. 10° 46′ S., about lon. 123° 10′ E., situated on the S.E. side of Rotto, is sheltered from all winds except those that blow from S.W. The ship Abercromby, of Bombay, about 1,100 tons burthen, bound to China, after being dismasted to the southward of Sandalwood Island, anchored in Booca Bay in 21 fathoms, soft bottom, January 14th, 1812, after having sent the boat to sound an opening or bay, which was seen from the offing. In the journal, it is called a bay or cove, with good anchorage, and no appearance of danger; at anchor in 21 fathoms water, she was about 3 cables lengths from the shore; the Village of Booca is at the head of the bay, and there a good watering place was found. The chief of the place supplied the Abercromby with buffaloes, pigs, goats, deer, poultry, bees'-wax, and honey; these articles were obtained in barter for beads, red cloth, large knives, gunpowder, muskets, pistols; and the natives prize highly gilt buttons. This island, like most of the others, abounds with a small breed of horses.

After refitting in part, and having obtained water and refreshments, she sailed January 26th for Copang Bay, but was afterwards obliged to proceed to Sourabaya to get new masts, which could not be obtained at Timor.

Semao Strait. SEMAO STRAIT separates Rotto from Semao and the S.W. point of Timor; it is a safe passage, with soundings of 40 to 60 fathoms in some places. The north end of Rotto and S.W. point of Timor bear from each other N. $\frac{1}{2}$ E. and S. $\frac{1}{2}$ W., distant 3 or

4 leagues; the western part of the strait is about 2 leagues wide between Rotto and Semao, where there is an isle contiguous to the north end of Rotto, and another off the S.W. point of Semao. Pulo Dana is a small island near the south end of Rotto, having other smaller isles close around.

GRIMES SHOAL appears not to have been discovered until 1827, when the ship Ann, Captain Grimes, bound from Port Jackson to Timor, sounded on it in 5 fathoms, rocky bottom, with a round hill on Rotto bearing W. $\frac{1}{4}$ N., the S.W. point of Timor N.W. by N.; it was thought there might be less water on the shoal than 5 fathoms. Grimes Shoal.

THE SATELLITE SHOAL seems, by the following description given in the journal of H.M. ship Satellite, to be separated from the above, and to lie farther north-westward. September 16th, 1828, steering for the Strait of Semao with a light easterly wind, came suddenly upon a bed of rocks, when the easternmost island off the north end of Rotto bore W. $\frac{1}{4}$ S., upon which we had $5\frac{1}{4}$ fathoms, the rocks plainly visible under the bottom, with the appearance of shoaler water to the westward: hauled up North, then had $6\frac{1}{2}$ fathoms, and at a cable's length farther to the northward, no ground at 60 fathoms. These rocks are about 4 miles from the nearest part of the island off the N. E. end of Rotto, a hummock on the centre of which bore W. $\frac{1}{4}$ S., and the S.W. point of Timor N. $\frac{1}{4}$ E., which forms the eastern boundary of the Strait of Semao. There appeared to be deep water all round this rocky shoal, which was passed over nearly at high water, and it may be dangerous in bad weather, with a high sea. Satellite Shoal.

H.M. ship Hind got 6 fathoms, coral rocks, September 16th, 1828, on the same bank, apparently about 4 miles from the nearest part of the island fronting the N. E. end of Rotto, a hummock on the centre of it, when on the bank, bearing W. $\frac{1}{4}$ S., and the S.W. point of Timor N. $\frac{1}{4}$ E. The rocks were distinctly seen under the ship, and as the water appeared to be shoaler to the westward, there may be danger in passing over this rocky shoal in bad weather when the sea runs high, particularly with a large ship. It will be avoided by keeping within 2 or 3 miles of the coast of Timor, in a safe and convenient channel.

MINSTREL PASSAGE is formed between Pulo Douw to the westward, and two small isles adjacent to the north-western part of Rotto to the eastward; it is thus described by Captain Barnes, of the Minstrel, who passed through it May 13th, 1820. At 10 A.M., Scotch Bonnet and the S.W. end of Rotto in one, bearing E. S. E. $\frac{1}{4}$ E., and the S.W. point of Douw N. E. by N. At $10\frac{1}{2}$ A.M., passed between Douw Island and a small island bearing nearly East from it, which we named Palmer Island: the channel appeared to be about 2 miles wide, but a reef projects 2 miles from the S. E. end of Douw, and another reef projects from the west point of Palmer Island $1\frac{1}{2}$ or 2 miles. Borrowed on the Douw shore to 8 fathoms, had $10\frac{1}{2}$ fathoms in mid-channel, and in hauling a little eastward had 12 and 14 fathoms, then no ground. These soundings seem to be on a ridge or bar, extending across the channel from one island to the other; and a strong current was setting through to the northward. When in deep water, steered N. by E., to pass at a proper distance on the west side of a small island, which we named Thomas Island, that lies north-eastward of Palmer Island; it has a reef projecting to a considerable distance from North to West. Minstrel Passage.

This passage would not be safe to attempt in the night, as the reefs would not be discerned, being hid by the land. Douw Island appeared to be well inhabited and

very fertile, as great numbers of sheep or goats were seen. At noon, observed lat. 10° 45′ S., lon. 122° 44′ E. by chronometer, Douw Island bearing from S. by W. to S.W. by W., distant 3 or 4 miles, Thomas Island E. ½ S. to S. E. by E. 3 or 4 miles.

Savu.

SAVU ISLAND is about 7 leagues in length East and West, low to seaward, with hills of moderate height in the centre, and lies in lat. 10° 37′ S., lon. 122° 0′ E.,* as stated already in the First Volume of this work. At each extremity of the island there are low sandy points with heavy breakers, which should not be approached in the night. There is said to be a small bay on the S.W. side of the S. E. point of the island, where ships may anchor in the Westerly Monsoon; but Zeba or Saba Bay on the N.W. side is better known, and it affords anchorage in the Easterly Monsoon. The Endeavour, Captain Cook, anchored in this bay, about a mile off shore, in 38 fathoms water, clear sandy bottom, with the north point of the bay bearing N. 30° E., distant 2½ miles, and the S.W. or westernmost extreme of the island W. 27° S. The refreshments procurable are buffaloes, sheep, hogs, fowls, limes, and coco-nuts; but there is a great scarcity of fresh water.

Captain King, in the Mermaid cutter, during his examination of the coasts of New Holland, anchored in Zeba Bay, October 24th, 1819; and observed that the bank was so steep, that although the anchor was dropped in 12 fathoms, the vessel lay in 22 fathoms, with 40 fathoms of cable out. The Rajah, Amadima, and the people, seemed very poor; refreshments were plentiful in exchange for rupees or gunpowder, but no fresh water could be obtained at this season, which obliged Captain King to proceed to Copang Bay for a supply.

Betwixt the west end of Savu and the small island Banjoan, lying near it, there is said to be a passage, and the channel between the latter and New Island is safe.

New Island.

NEW ISLAND has been stated, in the First Volume of this work, to lie in lat. 10° 40′ S., and lon. about 121° 43′ E., but the observations taken in the Panther make it in lat. 10° 46′ S., and 10 or 11 leagues W. S. Westward of Savu.

H.M.S. Satellite, in 1828, made it in lat. 10° 46′ S., lon. 121° 43′ E. by chronometer; this ship passed within a mile of its west side, at 6 P.M. August 9th, which was of even contour, about three-quarters of a mile long.

Adjoining channels.

The channel formed betwixt these islands and the east end of Sandalwood Island is 16 or 17 leagues wide, and clear of danger. The other channel, formed by Savu to the West, and by Rotto and Semao to the eastward and south-eastward, is about the same breadth, and equally safe; and either of them may be adopted by ships bound to or coming from the Ombay Passage, according to circumstances.

* This longitude of Savu, by the observations of Captain Heywood, agreeing with chronometers from Amboina, corresponds also with the observations of other navigators.

ARAFŪRA SEA.

ISLANDS.

THE CHAIN OF ISLANDS extending from the east end of Timor nearly to New Guinea, being seldom seen by European navigators, are imperfectly known; but are frequently visited by large Macassar proas, and others, which carry on a considerable trade with several of those islands, and which also annually visit the coast of New Holland, near the Gulf of Carpenteria, to procure the trepang or sea-slug, called also bechee mer, for the China market. Islands eastward of Timor.

PULO JACKEE, or NOOSSA NESSING, is a small isle, about 3 miles off the east point of Timor, in lat. 8° 19′ S., lon. 127° 18′ E.: the Dutch charts mark soundings around this end of Timor, and anchorage on the N.W. side of Pulo Jackee. Betwixt this island and Lettee, the next island to the eastward, the channel is about 9 leagues wide, and clear of danger. Pulo Jackee.

THE SERWATTY, or SEAWAY ISLANDS, extend about 35 leagues in an easterly direction from the east end of Timor towards the south end of Timor Laut. The following remarks are taken principally from the narratives of Lieutenants Kolff and Modera. Serwatty Islands.

Lettee, or Letti, is a high island of considerable extent, bearing from Pulo Jackee about E. ½ N., distant 9 or 9½ leagues.* The land is level near the sea, and reefs line the north and N.W. sides of the island at a distance of half a mile from the shore. The best anchorage in the South-east Monsoon is off the village of Tombra, on the N.W. side of the island, there being immediately opposite the village an opening in the reef 500 feet wide, with from 6 to 9 fathoms, sand. The anchorage, however, is very confined, and a ship intending to enter should first anchor outside, and then warp in and moor head and stern. During the Westerly Monsoon, the least anchorage is in the east side of the island off the village of Batu Meau. Lettee.

Moa is the next large island eastward of Lettee, separated from it by a small channel, and having near its N.W. cape a high peaked mountain called Korbou. The Dourga anchored off the west end of the island, at a place bearing due East from Batu Meau. Lieutenant Kolff describes the S.W. point of the island as having reefs surrounding it, but adds that on every part of the east side of the island there is good and convenient anchorage. Moa.

Lakor is low, resembling a coral bank raised about 20 feet above the sea. There are two villages on the north side of the island, off the western one of which the Dourga anchored in 7 fathoms, on a patch of sand and stones, and moored with a warp to the reef which lines the shore. The inhabitants informed Lieutenant Kolff that good anchorage was to be found between Moa and Lakor opposite the village of Mowai. Lakor.

* In Mr. Earl's chart of the Arafūra Sea it bears from Pulo Jackee E.N.E. about 20 miles.

Luan. Luan, about 15 miles E. N. E. of Lakor, is described by Lieutenant Kolff as about 14 miles in circumference, and high, with a number of small islands round it; an extensive reef studded with islets surrounds it, within which there is anchorage for small vessels. Trepang, turtle, and edible birds' nests can be obtained here in larger quantities than at any other of the islands, and the inhabitants are a kind and friendly people.

Sermatta. Sermatta has a high ridge of hills extending East and West, and is about 15 miles in length. It is the easternmost island of the Serwatty chain, and its eastern extreme is in about lat. 8° 25′ S., lon. 129° 37′ E.

Damme. DAMME, or DAMMA, about 75 miles N. N. W. from Sermatta, is a high, large island, having smaller islands to the southward and westward of it. There is a volcano on the N. E. extreme of the island, at the foot of which are some hot springs. Kulewatte Bay is on the east side of the island, and extends about 4 miles into the land; it has high and precipitous shores, and according to Lieutenant Kolff is in many parts unfathomable. The Dourga anchored under the north point of a small cove at the head of the bay. Wilhelm Bay, formerly the seat of the Dutch Residency, is on the north side of the island; it is much exposed, with bad anchoring ground, and a swell often tumbles in at all seasons.

Teon. Teon, or Tauw, lying E. N. E. of Damme, 35 miles distant, is hilly and of moderate height, and uninhabited; the channel between it and Nila is unsafe, there being a number of reefs in it. Nila lies about 6 leagues N. E. of Teon; it is a high round island, with anchorage for small vessels on its north side. The old Dutch charts shew two extensive shoals about 10 miles to the northward of Nila.

Seroa. Seroa, or Serũa, in about lat. 6° 20′ S., about lon. 130° 38′ E., lies in a N. E. direction from Nila, and is said to have anchorage on the north side; but most of those islands are high and steep to, with generally a rocky bottom in those few places where soundings are obtained.

Baba. BABA, or BABBER, lies about 60 miles West of Timor Laut; it is a large high island, encircled by small islands, some of which lie 4 or 5 leagues off. One of these, called Welang or Weetang, fronts the west end of Baba, and there is a bank of 5½ to 10 fathoms water between them, where a vessel may anchor, and be sheltered from westerly winds by the high land of Weetang, and by the high land of Baba from easterly winds. There is also anchorage at the east end of Baba, with the N. E. point of the island bearing about North, the south point S. by W., and the entrance of a fresh water river will then bear S. W.; but the bottom is generally foul about this island: refreshments may be obtained, but great caution is necessary in all intercourse with the natives, who are more barbarous than those of the neighbouring islands.*

Timor Laut. THE TIMOR LAUT or TENIMBER ISLANDS lie between the Serwatty and the Arroe Islands; the group consists of the large island of Timor Laut, the islands of Larat and Vordate, close to the N. E. of it, and the numerous small, low islands which front its N. W. side. There is no channel for large vessels within the group; and as the limits of the coral reef which lies outside the small island, the N.W. side of the group should be approached with great caution.

* When Lieutenant Kolff visited Tepa, a village on the west side of the island, the natives were shy and deserted the village, which led him to suspect that all was not right. After some time he found that the crew of an English Brig had been massacred some months previously, while bartering with the natives.

Captain Barnes, in the Minstrel, approached close to the S.W side in June, 1820, and coasted along the southern and eastern sides of the island within a moderate distance, which enabled him to make the following observations.

By two days' meridian altitudes of the sun, when near the south part of Timor Laut, made its southern extremity* in lat. 8° 27′ S., lon. 130° 50′ E. by chronometer measured from Delli, variation 2° 30′ E. At a small distance from the S.W. point, there is a small island covered with trees, the S. W. point of which is on a transit with the S. W. point of Timor Laut, bearing W. N. W., and a dangerous reef seems to extend about mid-channel between them; but a mud-bank with regular soundings stretches in a westerly direction from the woody island towards the coral bank of 6 fathoms before mentioned. South point.

The South or S.W. point of Timor Laut being rather low, and fronted by a dangerous reef projecting from it 2 or 3 miles, requires great caution when in its proximity during the night, particularly as the currents are mutable and strong at times. The land about the point is covered with trees, and the shore to about a mile eastward presents a rocky face, the east end of which has the appearance of the entrance of a river, and is remarkable by a large detached fragment of rock, resembling the hull of a ship. From the south point, the coast extends in an easterly direction 12 or 13 miles, then N. E. by E. a little easterly, and afterwards more to the northward; the whole extent, from the south point to the northern extremity of the island, being about 26 or 27 leagues in a N. N. E. direction.

In 1823, an English brig, supposed to be the Lady Nelson, anchored off Luora, on the east coast, to obtain refreshments; and while half the crew were on shore, the natives boarded the vessel, and killed the remainder, except two youths, who were still there when Lieut. Kolff visited Vordate in 1825 and 1826.

Captain Owen Stanley, in H. M. S. Britomart, visited Oleliet, a village on the S. E. part of the island, in 1839. It affords secure anchorage during the North-west Monsoon, in from 10 to 14 fathoms, about half a mile from the shore. Mr. Hill, the master of the Britomart, describes Oleliet as built on a hill, 413 feet above the sea, the land side being nearly perpendicular, and only capable of being ascended by means of ladders, which can be removed in case of an attack. Between Oleliet and Luora, there extends a coral reef about a mile from the shore. From Luora, the east coast of Timor Laut is high (about 600 or 800 feet) and thickly wooded. Captain Stanley makes Oleliet in lat. 7° 55′ S., lon. 131° 26′ E.

Larat, is a large island adjacent to the N. E. part of Timor Laut, from which other islands stretch in a N. Easterly direction to the islands called the Ki Islands. Larat.

Vordate, on the N. E. side of Larat, is about 15 miles in length from N. E. to S.W., and is the north-easternmost of the Timor Laut group; its N. E. point is in lat. 7° 50′ S., lon. 132° 18′ E., and may be easily recognized by its irregular outline, the neighbouring islands of Timor Laut and Larat being more level. A vessel, in the South-east Monsoon, after rounding the point at a little more than a mile distance, to avoid a rock off it, may run along the edge of the reef which lines the west coast, and anchor in from 10 to 30 fathoms, sand, close under the land between the town of Sebeano and the reef which extends from the S.W. point of the island.

* Captain Warington, in 1822, on his voyage from Port Jackson towards Batavia, passed within 5 or 6 miles of the southern extremity, and placed it in lat. 8° 14′ S., lon. 130° 43′ E. by good chronometers. Captain Cook, in his first voyage round the world, made it in lat. 8° 17′ S., lon. 131° 50′ E., but the lunar tables were at that time imperfect. Lieutenant Kolff makes it in 8° 17′ S., lon. 131° 7′ E.

Serra is the southernmost and largest island on the west side of Timor Laut, and about 7 miles distant from it. There is probably anchorage round its S. E. point.

Ki Islands, or Keys.

THE KI ISLANDS, or KEYS, are three large islands, with many adjacent smaller ones, situated about 15 leagues westward of the Arroe Islands, and about 20 from the S.W. part of New Guinea. The whole of these islands are little known to Europeans; and the same may be remarked of the chain of islands that extends in a north-westerly direction from the Ki Islands to the S. E. extremity of Ceram.

Great Ki.

Captain Barnes, in the Minstrel, who approached close to the eastern coast of the Great Ki, in July, 1820, describes it as high land, the coast bold to approach, covered with wood, and having on it several large villages.

Mr. Hill, master of H. M. S. Britomart, states that the mountains of Great Ki Island rise to a height of 3,000 feet; the lesser Ki being on the contrary very low, and having shoals extending from its north side. The water being very clear, the shoals are all visible by daylight. Ki Doula lies on the N.W. side of the lesser Ki, in a bay fronted by several small islands.

Arroe Islands.

THE ARROE, or ARRŪ ISLANDS, like the whole of this Archipelago, are imperfectly known; they extend upwards of 100 miles North and South, and lie between the Timor Laut Group and the south-west coast of New Guinea. They are said to be intersected by deep inlets or water channels, which seem to separate them into different sections; and are fronted by many small isles at the north-western and eastern sides. From the southern extremity of Arroe Islands, soundings extend a considerable way to westward; and in an easterly direction there are moderate depths of 16 to 35 fathoms as far as the coast of New Guinea, where a great bay is formed to the northward of Cape Valsche, or False Cape.

Contiguous to the Arroe Islands there are anchorages in several places, and the islands abound with some articles of refreshment, and others of trade; but the natives of these islands, and those of the adjacent coast of New Guinea, are inhospitable to strangers, and must be carefully watched.

South point of Arroe Island.

Captain Barnes, in the Minstrel, steered from Timor Laut, June 29th, 1820, towards the western coast of the Great Arroe, and carried soundings from 50 to 37 fathoms on the bank which extends about 20 leagues West and S.W. of Arroe Island. When the south end of Great Arroe bore East 5 or 6 leagues, had soundings of 22 fathoms, and crossed over a bank with 16 to 6 fathoms. Made the south point in lat. 7° 0′ S., lon. 133° 56′ E.* by chronometer measured from Delli in 17 days interlapsed time.

Niagoni.

July 3rd, at noon, anchored in 5 fathoms, hard sand, with grey specks, distant 12 miles off the town of NIAGONI, extremes of the western coast of Great Arroe from S. by W. to N. ½ E., observed lat. 6° 38′ S., lon. 133° 58′ E.† A ship coming in here, should not borrow under 6 fathoms, as the water shoals suddenly from 6, 5, 4, to 3 and 2½ fathoms. A boat with the Rajah visited the ship when we anchored. July 4th, at 10 A.M., attempted to land on the shore at the town of Niagoni, which the natives would not permit, appearing to be hostile and treacherous.

The northern part of the group is better known than the southern, which has not

* Captain Cook made this point in lat. 7° 6′ S., lon. 135° 0′ E. Lieut. Kolff places it in lat. 7° 6′ S., lon. about 134° 20′ E.

† The Triton passed very near the position here assigned to the town of Niagoni without seeing the land.

yet been explored by Europeans. In approaching the islands from the southward, a ship should keep 5 or 6 leagues from the land; and passing on the western side of the group, as far as the parallel of 6° S., she may haul in to the eastward, for the island of Babi, lying in lat. 5° 57′ S. Mr. Hill, of the Britomart, gives the following directions. "When Babi Island is approached, a N. N. E. course, 6½ miles, may be steered for the N.W. point of Wama (the next island to the north-eastward), on which stands the village of Wanla. There is anchorage off Wanla, but a vessel intending to proceed to Dobbo, a village higher up, should keep a mid-channel course, or keep Dobbo Point a little open on the starboard bow. The channel is deep, with irregular soundings, and the edges of the reefs, on each side, may be clearly seen from the mast-head. The anchorage at Dobbo is off the low sandy point, in 15 to 20 fathoms, good holding ground." In working in or out, great attention must be paid to the tides. The native pilots do not appear to be very trustworthy, if those received on board the Britomart were a fair specimen of them.

Wokan, Wadia, Wassia, lie in a direct line North of Wama, with numerous other islands near them to the eastward. Wokan is a large island, containing many villages; a reef lines its western side. Wadia is the next island, and has a town on its north side, which is the chief resort of the traders from Ceram. Wassia is the north-westernmost island of the group, and is separated from Wadia, by a strait, in which there is good anchorage.

NEW GUINEA, SOUTH-WEST COAST.

The following account is taken from Mr. Earl's Sailing Directions for the Arafūra Sea, compiled from the voyages of Lieutenants Kolff and Modera, of the Dutch navy, and published by the Admiralty.

"Frederick Henry Island, on the S.W. coast of New Guinea, was supposed to be part of the main land until 1835, when Lieut. Kaal, of the Dutch navy, passed through the strait which separates it. The island is about 100 miles in length East and West, and 58 miles in breadth. The land is everywhere low, apparently marshy, and covered with a dense forest. A number of natives were seen on the N.W. side of the island, by Lieut. Kolff, in 1826; but they shunned all intercourse with his people." Frederick Henry Island.

"Cape Valsche, or False Cape, the S.W. extreme of Frederick Henry Island, is, according to Lieut. Kolff, in lat. 8° 22′ S., lon. 137° 41′ E. The land about the cape, and the entire south coast of Frederick Henry Island, is fronted by a mud-bank, extending about 8 miles out to sea, having 3 fathoms on its verge, from which the depth rapidly increases to 9, 14, and 27 fathoms. About 50 miles to the N.E. of Cape Valsche the mud-bank begins to decrease in breadth, so that vessels are enabled to approach the shore." Cape Valsche.

"Dourga Strait was first entered by Lieut. Kolff in 1826, who supposed it to be a large river, and in 1828 the Triton penetrated about 40 miles from its western entrance; but it was not determined to be a strait until 1835, when two Dutch Government schooners passed through. The N.W. entrance is about 12 miles wide, the western point being in lat. 7° 27′ S., lon. 138° 46′ E., and the eastern point in lat. 7° 22′ S., lon. 138° 55′ E. The soundings at this entrance are from 6 to 9 fathoms, mud, which increase to 13, 15, and 18 fathoms while proceeding up the strait, the last being the depth in mid-channel at the part from which the Triton returned. The shores may be approached to within a mile, in soundings of from 5 to 8 fathoms. No danger was discovered by the Triton, though she beat up the strait against the S. E. Monsoon Dourga Strait.

The position of the south entrance has not yet been determined. This strait is of little importance to seamen at present, except that it leads to the possibility that the portions of land which are seen by vessels passing through Torres Strait, and which were supposed to be parts of New Guinea, are, in fact, a series of islands; and if so, some channel may be discovered, by means of which the dangers attending the navigation of Torres Strait may be avoided."

"On the north side of the strait, about 5 miles within the entrance, is a creek, in which the water is fresh at three-quarters ebb; but a vessel would find difficulty in watering there. The upper part of the creek is inhabited by Papuas, or Oriental Negroes, the aborigines of the coasts of New Guinea, who possess small canoes, and are armed with bows and arrows, and spears. A number of them came down on the beach and communicated with the people of the Triton, bartering their arms and ornaments for cloth and empty bottles; but after a friendly intercourse had subsisted for nearly an hour, a difference occurred, in which three of the natives were killed and several of the Dutch wounded."

Coast North of the Dourga.

"The coast from the entrance of Dourga Strait extends in a N. N. Westerly direction, to the False Utanata River, in lat. 4° 48′ S. The land is low and covered with forest, and a mud-bank, which lines the shore, prevents vessels from approaching nearer than from 4 to 6 miles. This part of the coast is thickly populous, but the natives are inhospitable to strangers."

Triton Bank.

"The Triton Sand-bank, the south side of which is in lat. 6° 2′ S., lon. 138° 4′ E., was discovered by the Triton. It lies about 18 miles off shore, with 10 fathoms, mud, immediately to the southward."

Providential Bank.

"Providential Bank, in lat. 5° 38′ S., lon. 137° 67′ E., has 4, 6, and 7 fathoms immediately to the South of it, and 12 fathoms about 2 miles from its western end. It lies 10 miles from the main."

False Utanata River.

"False Utanata River, in lat. 4° 48′ S., lon. 136° 57′ E., is of considerable size, but a bar of sand extends across the mouth, on which, during the S. E. Monsoon, there is a heavy surf. A vessel may anchor in 13 fathoms to the westward of the bar; but a strong swell from the southward, and the reefs, which lie to the north-west, render this anchorage unsafe during the S. E. Monsoon. False Wakia River, 7 or 8 miles to the northward, is of a similar description. The shores of these rivers are thickly peopled, but no intercourse could be obtained with them. The natives of Ceram visit this coast during the N.W. Monsoon with a number of *prahus* (proas), and carry on a brisk trade."

False Wakia River.

Coast North of the False Utanata.

"The coast to the northward of the False Utanata forms a deep bight, terminating in Cape Steenboom, lat. 4° 43′ S., lon. 136° 23′ E., across which, in a line between the Cape and the river, extends a chain of shoals."

Utanata River.

"Utanata River, lat. 4° 32′ S., lon. 136° 10′ E., is about 2 miles wide at its mouth, and is fronted by a bar, on which there is rather more than a fathom at low water. The best anchorage is a little to the westward of the mouth of the river, about 3 miles from the west point, in from 6 to 8 fathoms, mud. The Triton lay here 11 days, and completed her water, in which the crew were assisted by the natives, who uniformly behaved in a friendly manner; probably having become more civilized than those to the southward, from their having had more communication with the Ceramese and Macassar traders. Plantains, coco-nuts, limes, papyas, bread-fruit, nutmegs, and turtleshell, were brought off by the natives in their canoes, and exchanged for calico, looking-glasses, chopping-knives, and beads, but the former is most in demand; pigs abound, but the natives do not like to dispose of them."

"To the northward of the Utanata lies the Wamūka River, in lat. 4° 29′ S., lon. 136° 6′ E. It is rather smaller than the former, and, like it, is covered by a bar." Wamūka River.

"Cape Būro, in lat. 4° 7′ S., lon. 135° 9′ E., is a steep promontory, visible at a distance of about 30 miles, with no soundings, 4 miles outside. A range of mountains stretches from thence to the eastward into the interior, with three table-hills on it, which are visible from off the False Utanata River." Cape Būro.

"Lakahia Island, lat. 4° 2′ S., lon. 134° 53′ E., is moderately elevated. May, 1826, the brig Dourga anchored in 5 fathoms, with the island W. S.W., distant 4 miles, and obtained water and refreshments, but owing to some of the boat's crew having attempted to cut down a coco-nut tree, the natives attacked them and killed one of the men. There is a bight in the main land to the northward of the island, which has not been examined." Lakahia Island.

"Triton Bay is an inlet, extending 6 miles N. E. into the main land of New Guinea. The coast is here fronted by a chain of small islands, the shores of which are steep to. The best entrance to the bay is by a strait, 3½ miles wide, between the Island Semieuw, lat. 3° 48′ S., lon. 134° 12′ E., and the west point of Aidūma, lat. 3° 51′ S., lon. 134° 14′ E. A chain of five small islands stretches 4 miles W. S.W. from the west point of Aidūma, and the fair channel lies between the outermost of these and Semieuw." Triton Bay.

"Fort Dūbūs, a settlement of the Dutch, has been placed at the head of a small cove on the north side of Triton Bay, in lat. 3° 42′ S., lon. 134° 15′ 41″ E. This cove is 2 miles deep, and 1 mile wide, having at the entrance a depth of 32 fathoms, which decreases to 5 fathoms, mud, at its head, where a vessel may moor a cable's length from the shore. The channel into the cove is close along the S.W. side, as a mud-bank, nearly dry at low water, extends from the N. E. side, three-quarters of the width of the cove. High water at full and change, 1h. 8m., rise and fall 7 feet. This settlement was founded by the Dutch in 1828. The garrison consists of about a dozen European and 40 native soldiers. Water and refreshments may be obtained there." Fort Dūbūs.

"Iris Strait, the channel by which the Triton entered Triton Bay, is formed by the Island Aidūma to the South, and by Dramaai Island and the main land of New Guinea to the North and East. The south entrance of the strait, which is 2 miles wide, is in lat. 3° 54′ S., lon. 134° 22′ E. From thence the strait stretches N.W. by W., about 6 miles, having a breadth of from 1 to 2 miles throughout, but having no soundings in mid-channel with 90 fathoms of line. A vessel may anchor in a bight on the N. E. side of Aidūma in 25 fathoms, at a cable's length from the shore, and opposite to a fertile valley, in which there is a native village, where refreshments may be obtained." Iris Strait.

"Namatotte Island, lat. 3° 44′ S., lon. 134° 1′ E., was the western limit of the Triton's survey. A group of high islands extend from this westward, the extremity of which is Cape Katomūn, about lat. 4° 0′ S., lon. 133° 3′ E. This cape rises into a high mountain, and there is no ground with 100 fathoms 4 miles to the westward of it." Namatotte Island. Cape Katomūn.

"Pūlo Adi, or Wessel Island, which extends N.W. and S. E. about 25 miles, lies 30 miles to the S.W. of the entrance of Triton Bay. The S. E. point of the island is in lat. 4° 19′ S., lon. 133° 57′ E., and W. S.W. of this point, about 9 miles' distance, lies Bird Island, which is encompassed by a reef. Bottom cannot be found with 100 fathoms to the westward of the reef, though between the island and Pūlo Adi there are soundings of 14 to 25 fathoms. To the S. E. of the west point there is a small bay, in which anchorage may be had in 10 fathoms." Pūlo Adi, or Wessel Island. Bird Island and reef.

WINDS AND CURRENTS.

Easterly Monsoon. Westerly Monsoon. Weather.

"In the sea lying between New Guinea and Timor, the Easterly Monsoon commences in April and continues until the beginning of October, when, after a few weeks of variable winds, the Westerly Monsoon sets in and continues without intermission until the beginning of March. In the southern part of the Indian Archipelago generally, the Easterly Monsoon is attended with fine weather; but on the S.W. coast of New Guinea, and among the islands to the westward, as far as the east coast of Celebes, frequently squalls, with heavy rain, are experienced at this season, often accompanied with considerable swell from the southward, while during the remainder of the year the weather is fine. This rule, however, does not extend farther to the westward, for from Celebes to the western extremity of the Archipelago, and also on the north coast of Australia, the westerly is the rainy monsoon.* The monsoons, when at their height, usually blow in an E. S. E. and W. N. W. direction; but towards the change they draw round more to the southward, sometimes continuing several days at S.W."

North-west current.

"During the Easterly Monsoon, the current sets to the N.W. along the western coast of New Guinea and between the Ki and Arrū Islands, and thence eastward along the south coast of Ceram, at the rate of 1 or $1\frac{1}{2}$ miles an hour, according to the strength of the wind, the velocity being greatest along the coast of New Guinea. At this period an easterly current prevails on the north side of the islands, extending from Timor to Timor-Laut, so that a moderately fast vessel would experience no difficulty there in beating up against that monsoon. In the Westerly Monsoon the current in these seas usually sets with the wind, but its velocity is not so great as during the other season."

Easterly current.

Vorkay Island and Trepang Banks.

Vorkay, a large island near the southern extreme of the group, is important, from its pearl fishery. The trepang banks lie between this island and several small islands 8 miles to the eastward.

MOLUCCA AND BANDA SEAS.

WINDS AND WEATHER.

Monsoons among the Molucca Islands.

THE NORTH-WEST MONSOON generally commences among the Molucca Islands early in, or about the middle of, November, but seldom blows strong till late in December, continuing until the end of March; then, after an interval of calms, light variable winds, squalls and rain; in April the South-east Monsoon gradually sets in, and strengthens in May, continuing until October, when the winds become variable.

* "It is difficult to account for this fact, unless we suppose that the clouds brought from the Indian Ocean by the Westerly Monsoon are stopped and emptied of their contents by the islands on the western limits of the Archipelago; and that, in like manner, the Easterly Monsoon brings the clouds from the Pacific, which break over the islands to the eastward. The south part of Timor and the north coast of Australia, where the seasons are similar to those at the opposite extremity of the eastern seas, lie open to the westerly winds from the Indian Ocean."

In the track between Celebes and Gillolo, and sometimes eastward of the latter, as far as the coast of New Guinea, the winds prevail from N. N. Westward in the North-west Monsoon, and from S. S. Eastward during the opposite season. This is more particularly the case in the Molucca Passage, where the winds blow nearly right through, prevailing more from North than from West in the North-west Monsoon, and more from South than from East in the other season. Therefore, at the Molucca Islands, the former is called the *Northerly Monsoon*, and the other the *Southerly Monsoon.* But the winds are subject to great changes during both monsoons, in the vicinity of the extensive islands which form the boundaries of Pitt Passage, whereby ships that sail well may *generally* gain ground against the monsoon in any direction.

IN THE BANDA SEA, or that space bounded by Bouro and Ceram to the northward and by Timor and Timor Laut to the southward, the North-west Monsoon becomes a W. N.W. one, for the winds prevail more from West than from North, and they prevail more from East than from South during the South-east Monsoon. In the space betwixt Timor and Australia, the wind often blows at W. S.W. or West during the Westerly Monsoon, and in both these seas it is accompanied with hard squalls, dark gloomy weather and rain, which occasions a constant easterly current. The atmosphere over the N.W. coast of Australia, being greatly rarified by the influence of the sun upon that dry, barren soil, attracts the current of air from the ocean towards its shores. Therefore, when the sun is in the southern hemisphere, there is no S. E. trade experienced near the northern coast, for the Westerly Monsoon extends to lat. 15° or 16° S., where the winds begin to draw to south-westward; and in a higher latitude they veer to S. S.W. and South, blowing along the coast in the night, or inclining towards it in the day. But as the distance is increased from the coast westward, they will be found to draw gradually round into a S. E. trade. Monsoons in the Banda Sea, and near New Australia.

THE SOUTH-EAST MONSOON, which commences in the Banda Sea in April, is set in by the end of May, at Amboina, Ceram, and Banda, and with it the rainy season at these islands. But it is remarkable that the rains do not extend to the Island of Bouro, although it is not more than 20 leagues to leeward of Amboina; for at Bouro the fair weather commences with the same monsoon that brings rain and unsettled weather to the islands to windward of it. South-east Monsoon in the Banda Sea.

In the strength of the South-east Monsoon the winds blow sometimes strong through between Bouro and Ceram. Captain Waterman, in the ship Volunteer, bound to Amboina, in 1812, beat several days against a strong S. E. wind, under the lee of Manipa and Kelang, and was obliged, July 17th, to run into Cajeli Bay, the ship being only able to carry her foresail and close-reefed maintopsail.

ISLANDS.

THE CHAIN OF ISLANDS adjoining the west coast of Gillolo were formerly considered as the principal spice islands; but since the Dutch destroyed the trees, this valuable article of trade is not procurable here. Ships that touch at these islands may, however, be supplied with refreshments, such as goats, sheep, poultry, sago, with various sorts of fruit and vegetables. Molucca Islands.

TERNATE, the northernmost of these islands, is of small extent, but high, with a Ternate.

fort on the east side called Fort Orange, where is the chief town. The Scaleby Castle, bound to China by the Eastern Passage, November 27th, 1814, anchored in 22 fathoms, coarse sand and gravel, with the Flagstaff of Fort Orange N.W. by N., and moored with the stream anchor to the northward. During the night, one of the most violent explosions of the volcano occurred ever known at Ternate. Water was only procurable in small quantities at this time, as four or five butts drained the wells. This place is in lat. 0° 49′ N., lon. 127° 30′ E., and the anchorage is near the shore abreast the town. The Dutch frigate Maria Reygersbergen made the road in lat. 0° 48′ N., lon. 127° 29½′ E., and the volcano mountain in lat. 0° 48′ N., lon. 127° 23½′ E. Variation 2° 0′ E. in 1820.

The King of Ternate was considered as the sovereign of all the Molucca Islands adjacent, until they became tributary to the Dutch. There is a small isle about 2 miles off the north end of Ternate, called Kiery, with rocks fronting it to the northward. Both Kiery and Ternate have a pleasant aspect, being cultivated, and well inhabited.

Tidore, adjoining islands and dangers.

TIDORE is nearly of the same size as Ternate, lying to the south-eastward, and separated from it by a safe channel: the N. E. end of the island is in lat. 0° 46′ N., lon. 127° 34½′ E., the mountain in lat. 0° 40′ N., lon. 127° 22½′ E.; and the south extreme in lat. 0′ 34′ N., lon. 127° 24½′ E., by the Maria Reygersbergen's observations. The anchorage at Tidore is on the east side the island, near the town, in 30 fathoms, sandy bottom; but the ground is foul in several places, with deep water close in shore. From Tidore, in a south direction, Potbaker Island, Motir or Moone, Mackian, Kayo, with other smaller isles, stretch along the coast of Gillolo at a considerable distance, nearly to the north part of the large Island of Batchian; and all these islands are generally bold to approach, with safe passages between them, and a good channel between them and Gillolo.

The only known dangers are two small sand-banks, dry at low water, almost 5 miles East from the middle of the passage between Tidore and Potbaker Island, the next to the southward of Tidore; these banks are conspicuous when the sun shines, having then a white appearance; and although they lie in the fair way of ships coming from Tidore towards the Strait of Patientia, yet by keeping the Gillolo shore aboard in the night there is no danger. The anchorage at the Island Mackian, although near the shore, is tolerably safe, in about lat. 0° 24′ N., off Fort Reeburg, at the N. E. part of the island. November 26th, 1814, the Scaleby Castle anchored in 35 fathoms, sand and shells, with Fort Reeburg S.W., off shore a quarter of a mile; the current then setting southward. She had previously passed from the westward between Mackian and Moone, the latter being the next island, northward of Mackian, and lying between it and Potbaker Island.

Latta Islands.

GERFTSIUS, or LATTA ISLANDS, are a group of small isles and rocks south-westward of Mackian, not considered dangerous to approach in daylight, for most of the rocks are visible. Wolf Rock, in lat. 0° 30′ N., lon. 127° 6′ E., distant 17 leagues West of Gillolo, is the northernmost and outermost of these, and being level with the surface of the water, ought to have a good berth in the night. H. M. S. Virginia saw the sea breaking over this rock, which was visible in the hollow of the swell; the Peak of Ternate bears from it N. E. ¾ N., distant 43 miles, another of the Molucca Islands bears from it S. E. by E., distant 4 leagues, and a small isle off the north end of the latter is about the same distance from it, bearing E. by S.

Wolf Rock.

BATCHIAN, TAWALLY, and MAREGOLANG, are three large islands fronting the S.W. part of Gillolo, with numerous small islands contiguous to them, most of which are safe to approach. Batchian is a high island, extending about 18 leagues in a S. S. E. direction, its southern extreme being parallel with the south end of Gillolo; the STRAIT of PATIENTIA is formed between them. The Strait of Batchian is formed betwixt the west coast of the island of this name and the adjacent islands. The southern part is broad, and there is good anchorage in most places, with shelter in some of the bays or harbours formed by the islands; but the tide in the north part of the strait runs very strong. Both these straits are considered safe for ships, with proper attention; but that of Patientia is considered the best, being wider than the other, although destitute of good anchorage, except in some bays on the Batchian shore. The tide sets through among those islands to the northward and southward, about 6 hours each way, although not always regular, and it rises about 6 feet. *Batchian, and adjoining islands.* *Tides.*

The Dutch frigate Maria Reygersbergen, in 1805, went from Amboina to Ternate, through the Strait of Patientia, and returned by the same route, and her journal contains the following remarks.

NEGORY KALAM is a village on the west coast of Gillolo, having good anchorage off it in 25 and 30 fathoms, stiff ground. A little to the southward of the village there is a fresh water river, where abundance of wood, water, and refreshments may be procured. When at anchor here, the north point of Kayo bore S. by W. $\frac{1}{4}$ W., Potter Island W. by N., Motir S.W. by W., and Mackian S.W. by S. The Point 2 miles to the northward of the village is in lat. 8° 28′ N., lon. 127° 37′ E. *Negory Kalam.*

The Island Kayo extends from lat. 0° 7′ N. to 0° 1′ S., and is in lon. 127° 23$\frac{1}{2}$′ E. *Kayo.*

The point of Gillolo, which bounds the eastern side of Patientia Strait in coming from northward, is in lat. 0° 13′ S., lon. 127° 45$\frac{1}{2}$′ E.; West from it about 7 miles lies Batto Lombo Island, close to the Batchian shore, which bounds the entrance of the strait, on the western side. Between the N. E. point of this island and the point of Batchian, called Bristly Point, lie two islands near the shore, and to the southward of the point and southernmost of these islands there is a large bay, with good anchorage, and plenty of wood and water. *Patientia Strait.* *Watering places.*

When through the narrows, and to the S. Westward of West Island, close to the shore of Batchian, is Lelary Island, low, long, and flat, covered with trees: opposite to its N. E. point, there is a fresh water river on the Batchian shore, where plenty of wood and water may be obtained. Amsterdam Island, in the middle of the narrows, is in lat. 0° 20$\frac{1}{2}$′ S., lon. 127° 53$\frac{1}{2}$′ E. by chronometer from Amboina. *Amsterdam Island.*

The S. E. extremity of Batchian, called John Henecker Point, in lat. 0° 48′ S., lon. 128° 3′ E., has soundings of deep water within a small distance of the shore, with some contiguous isles and projecting spits, which should have a proper berth. *John Henecker Point.*

The best route from Ternate or Tidore to Amboina, in the S. E. monsoon, is considered to be through the Strait of Patientia. After the reduction of Ternate by the British, the Albion, Captain Wallace, sailed from Tidore, July 8th, 1801, having troops on board for Amboina, and proceeded through this strait. She stood over towards the Gillolo shore, in order to avoid the sand-banks which lie nearly half channel over from the south end of Tidore, then worked southward, betwixt Batchian and Gillolo, with variable winds and much rain. After approaching the group of isles called Amsterdam, East and West Islands, and others which nearly bar the middle of the strait, she went through a very narrow passage, between Batchian and West Island, which is the nearest isle to the eastward; and here the tide was exceedingly rapid. This passage *Directions for sailing through the Strait of Patientia, towards Amboina.*

ought not to be chosen, for the other passage to the eastward of it is much broader. Captain M'Call came through the latter in the Clyde, and found it perfectly safe, when passing through the Strait of Patientia, shortly after the Albion: in proceeding through it, no soundings were obtained.

Having got through the narrows, stand over to Gillolo, and keep along this shore, because a shoal is placed in the Dutch charts eastward of East Island; and the Middle Sand, in the southern mouth of the strait, nearly mid-way between the east point of Batchian and the Gillolo shore, must have a berth in passing; on either side of it the channel is safe. When it is approached, a number of small isles surrounded with reefs will be discerned, which must also have a berth in steering out of the strait to the southward for Oby Major; and after passing through any of the channels to the eastward of the latter island, already noticed in the section where the Gillolo Passage is described, proceed to the southward, betwixt Manipa and the east end of Bouro.

Bouro.

BOURO ISLAND has been mentioned, and the geographical situation of its north coast described, in the section where instructions are given for sailing through Pitt Passage; but it becomes necessary here to describe the great bay, and the adjacent islands.

Cajeli Bay.

Cajeli, or Bouro Bay, at the N. E. part of the Bouro Island, is easily known by the Island Manipa, which bears East from it. The points on both sides the entrance are lined by reefs, and no soundings are got until near the shore inside the bay; there is good anchorage on the north side, within the rounding of the point, from which a reef of coral stretches out a little distance; but the proper road is at the S. E. part of the bay, where Fort Defence and the village are situated in lat. 3° 24′ S., lon. 127° 4′ E. by chronometers from Amboina, and the mean of many lunar observations.

The Fort.

Directions for sailing to the anchorage.

To enter the bay with a turning wind, do not approach near the points on either side, nor borrow into the north side of it; the southern shore is fronted by an extensive coral reef, to the distance of a mile or more, which shews itself, and may be always avoided with a good look-out. With a fair wind, steer westward about mid-way between the points, until the western pitch of the south bluff point bears about S.W., and when the town begins to open in view, haul gradually W. S.W. and S.W. till the north point of the bay bear to the eastward of North. By keeping the point in this direction, and the fort South or S. $\frac{1}{4}$ E., you will pass clear of the reef which projects about a mile from the east side the bay, and will go between it and the pitch of a flat that extends a mile off the western shore.

There is a rugged mount or double peak on the south side the bay, called the Mother and Daughter, which is a good mark: steer into the bay until this mount bears about S. E. by S., then haul right in for the town, and anchor off it in 27 to 24 fathoms, muddy bottom, at the distance of a mile, or three-quarters of a mile, from the beach, with the fort bearing South or S. by W., a small Red Island East, and the north point of the bay N. $\frac{1}{2}$ E. The best berth is in 19 fathoms, with the fort bearing S. by W. $\frac{1}{2}$ W. distant one mile, Mother and Daughter S. E., east point of the bay N. E. $\frac{1}{2}$ E., and the N.W. point N.W. by N.

A ship may anchor with the fort bearing from S. S. E. to S. S.W.; but as the bank is steep, sail ought to be reduced in time, and the anchor should not be dropped under 25 fathoms; this is indispensable to the westward of the fort, where the water shoals from 20 fathoms, as fast as the lead can be hove, to 2 fathoms, hard sand, whereby

several ships have grounded in coming to anchor. The fort ought not to be brought to the eastward of S. S. E., for the hard sand-bank lining the west side the bay projects nearly a mile from the shore, having only 2 or 3 fathoms water on it, and 35 fathoms at the distance of a cable's length outside. If a ship by accident get to the westward, she ought to anchor in 40 fathoms, mud, and will then be about 2 cables' lengths from the edge of the bank.

The coral reef that fronts the S. E. shore of the bay has only 3 or 4 feet water over the rocks, and there are 40 fathoms about 2 or 3 cables' lengths outside; therefore, it ought not to be approached under 40 or 45 fathoms.

In this bay ships are sheltered during both monsoons, and as brisk land winds prevail in the night, the egress is easy. Goats, hogs, fowls, and venison, may be procured sufficient for two or three ships, and abundance of fruit of various kinds. The water is good, and procured about 100 yards eastward of the fort, but as long boats cannot come close to the shore, it is necessary to float the casks off to them. Wood is plentiful, and spars fit for masts may be got from the durian-tree; the Cai-pooty tree abounds on this island, from which the natives extract the valuable oil thus named, in great quantities. Refreshments.

The tides rise and fall about 6 feet, but are not regular. It is high water at 1 hour on full and change of moon. Variation 1° West in 1798. Tides.

Close to the west end of Bouro there are some small islands, and the Dutch charts place a rock above water about 2 or 2½ leagues off the S. W. part. The southern coast is of semicircular form, steep to approach, and destitute of shelter: from the southernmost point, in lat. 3° 49′ S., a reef projects considerably, having a small isle to the eastward, said to have anchorage close to it. Southern coast of Bouro.

AMBLAW, in lat. 3° 52′ S., lon. 127° 14′ E,* is an island of considerable size, separated from the S. E. point of Bouro by a channel 5 or 6 miles wide: there is said to be a reef of rocks nearly in the middle of this channel, which is laid down in several charts; but it is omitted in a large Dutch manuscript chart in my possession, and some navigators state the channel to be clear of danger. Close to the shore of Amblaw there is a place where Dutch vessels occasionally anchor, but the bottom appears to be foul. Amblaw.

MANIPA is a high island, about half-way betwixt the east end of Bouro and the west end of Ceram, the body of it being in lat. 3° 17′ S., lon. 127° 28′ E.† About 1½ miles off its western extreme, lies a rock or islet, betwixt which and Manipa there is a safe passage for a ship. The channel between this islet and Bouro, called the Strait of Bouro, or Manipa Passage, is about 5½ leagues wide, clear of danger, destitute of soundings, and is used by all ships passing betwixt Bouro and Ceram. On the south side of Manipa is a fort, off which, and within a small islet, there is anchorage close to the shore: some small islets lie close to the north side of Manipa. Manipa.

BONOA, in about lat. 3° 0′ S., lon. 127° 56′ E., is a high, rugged, steep island, of considerable extent N. E. and S.W., separated from the N.W. part of Ceram by a safe channel, 3 or 4 miles wide, which is contracted a little by small isles and shoals that stretch along the Ceram shore. Bonoa.

* The frigate Maria Reygersbergen made the south point in lat. 3° 57′ S., lon. 127° 20½′ E. by chronometer from Amboina.

† Monsieur D'Urville, of the Astrolabe French corvette, places it about 8 miles farther East.

Pulo Baby.

PULO BABY, to the S. S. W. of Bonoa, is lower than the adjacent islands; it is separated from the west point of Ceram by a narrow passage, called Nassouwens Gat, fit only for proas and small vessels.

Kelang.

Tides.

KELANG is a high island, close to, and S. Westward of Pulo Baby, there being no passage between them; but there is a safe channel 3 miles wide, betwixt Kelang and Manipa, which lies to the S. W. of the former island. The tides or currents which set through these channels sometimes produce strong ripplings resembling breakers, and they make a great noise when there is a calm in the night.

Ceram.

CERAM, excepting some parts near the sea, is formed of mountainous land, extending nearly East and West about 54 leagues; the S. W. point, called Seeal, or Dry Rice Point, is in lat. 3° 31′ S., lon. 127° 56′ E., and forms a peninsula, with Lahoo Deep Bay to the N. E. This bay has some small islands and shoals at the entrance, with soundings inside, and is to the northward of Amboina; for Seeal Point lies directly North from the N. W. extreme of that island. Captain Hunter, of the ship Marshall Bennett, describes a small harbour, called Wahaay, on the north side of Ceram, which, although very confined, not being much more than a quarter of a mile wide between the coral banks which line its shore, is advantageous above many other places, being a free port, and affording a plentiful supply of wood and water, and other refreshments. It requires a leading wind to enter; during the Easterly Monsoon the weather is fine, with regular land and sea breezes, the Westerly Monsoon being the wet and squally season. General depths in the harbour are from 15 to 22 fathoms.*

Amahay Bay, northward of the small island Noesa Laut, has soundings of deep water. The south coast of Ceram is bold to approach, except Hoya Point, 9 or 10 leagues eastward of Amahay Bay, which has a small sandy isle and sand-banks, stretching out from it about 2 miles. Two islands, called the Great and Little Keffing or Kessing, lie close to the S. E. point of Ceram, and are nearly united to it by a coral reef: the channel which separates these from Ceram being narrow, is not easily discerned. The East point of the Keffing Islands, according to Lieutenant Kolff, of the Dutch Navy, is in lat. 3° 50′ S., lon. 130° 45′ E.; it has been placed in our charts several miles farther to the south-eastward; but as Lieutenant Kolff came direct from Banda, it is probable that his position is not far from the truth. Within 7 leagues of Keffing Point, a coral reef lines the coast from thence eastward, and around Keffing Island.

Sawa Bay.

Sawa Bay, on the north coast of Ceram, in lat. 2° 51′ S., lon. 129° 6′ E., has the outer island Pulo Bassar, and several small isles surrounded by shoals, stretching out 2 or 3 miles from the low point, called Tanjong Craw,† which forms the west point of the bay; and the islands near the shore at the S. E. part of the bay are also surrounded by shoals. The channel leading to Sawa Road or Harbour is to the westward of the latter, by steering South for a mount called Friar's Hood, at the bottom of the bay, near the village Selema; and having rounded the reef and islands fronting Sawa Road, haul along shore to the eastward, and anchor near it, with Pulo Attuee, the westernmost island, bearing North. This road is about three-quarters of a mile in breadth, with soundings of 40 to 25 fathoms close to the Ceram shore, which is the safe side, as there is a reef S. E. of Pulo Attuee. Although the water be deep, the bottom is mud, affording good anchorage: and this place forms a good harbour in the

* Naut. Mag. for 1842, p. 1.

† In the Dutch frigate's journal it is called Para Point, and placed in lat. 2° 49 S., lon. 129° 12½′ E.

South-east Monsoon; excellent fresh water may be procured, and large spars. Sawa Village is in lat. 2° 56′ S. Old Lamata, or Flat Point, lies to the eastward, in lat. 2° 53′ S., lon. 129° 42½′ E. Flat Point.

Waroo, or Wakoo Bay, in lat. 3° 25′ S., about lon. 130° 40′ E., is on the N. E. of the island Ceram, affording good anchorage, where water and other refreshments may be procured.* Waroo Bay.

Leeuwaarden Shoal, in lat. 2° 56′ S., lon. 130° 43½′ E., or 2° 44′ East of Allang Point, Amboina Bay, by chronometers, is distant about 7 miles from the shore that forms the N.W. side of Waroo Bay: it is 2 or 3 miles in extent, in form a crescent, steep to, and very dangerous, the west side being a white sand-bank, and the eastern side a ledge of rocks, with high breakers, many of the rocks above water. The ship Venus, of Bombay, got upon this shoal in 1799, during the night, and was abandoned by the crew. There are no soundings near the shoal, nor in the channel between it and the shore, which is considered safe. Leeuwaarden Shoal.

If coasting with an offing of 7 or 8 miles from the high land of Stole, you bring the Friar's Hood to bear S. by W. ½ W., or when you open the Friar's Hood to the eastward of the high land of Stole, you will then be on a line with the west point of the shoal.

Leeuwaarden Island, in lat. 3° 20′ S., lon. 130° 58′ E., is to the northward of the east point of Waroo Bay, called Berg Wakoo by the Dutch. Leeuwaarden Island.

To the eastward of Keffing, and the reef that surrounds it and the east end of Ceram, there is a small isle, betwixt which and Keffing, a channel is formed about 2 or 3 miles wide, with soundings from 30 to 50 fathoms in mid-channel, and 5 to 10 fathoms close to the reefs; the narrowest part of this channel seems to be about a mile inb readth, and it is thought to be safe. Isles and channels off the east end of Ceram.

CERAM LAUT bears about East, 6 miles distant from the south point of Keffing, and is the westernmost and largest of a range of small islands, chained together and surrounded by a reef, that extends 5 or 6 leagues nearly East and West. Ceram Laut, according to Lieutenant Kolff, is in lat. 3° 50′ S., lon. 130° 59′ E. There is anchorage on the N. W. side of the island of Kilwari, which lies on the N.W. side of Ceram Laut, but the bottom is bad. There is said to be a safe but narrow channel between this island and Ghissa. Ceram Laut.

A group of three islands lies to the eastward of the Ceram Laut chain, of which GOZAM, or GORAM, is the easternmost; its eastern point is in 4° 3′ S., lon. 131° 50′ E. There is a channel westward of this island, but no safe passage between the westernmost one and Ceram Laut chain. The southern island of the Gozam group, situated S.W. of Gozam, has a high, flat hill on it, is of considerable extent, and called MANAVOLKA. Gozam.

THE MATABELLA ISLANDS lie 20 miles S. E. from the Gozam group, the channel between being safe and capacious; and 6 miles farther to the southward lie three more, but smaller islands. When the Triton Dutch corvette, Captain Steenboom, Matabellas.

* The inhabitants of the villages on the coast of Ceram are *generally* hospitable to Europeans, who touch for refreshments, or to trade; but they are in a state of abject and savage poverty. The natives of this island are said to have devoured the prisoners procured by their depredations against each other, which practice has ceased since the Dutch purchased them as slaves. They are timid assassins, and generally make their depredations in the night; skulls hung in their huts as trophies of valour are still frequently seen. An officer, who has been much among those people, says that the young men must produce a skull of a human victim, each to his intended bride, before she will consent to accept him for a husband.

returned from New Guinea in 1828, she found a safe and wide channel between the two groups; these may be easily distinguished from each other, as the southern extreme of the Matabellas is a small table-hill, and the whole of that group is hilly, while these islets are small and low. The north-easternmost of them is in lat. 4° 32′ S., lon. 132° 5′ E. Next comes the island of Tehor or Taw, and then 5 or 6 islands extending upwards of 20 miles to the southward; but none of these are well known. The channels between them are, however, said to be safe, and the Triton passed through them on her voyage to New Guinea. The natives, who resemble those of the Ki Islands, are simple and industrious, and they produce rice and Indian corn, which are sold to the people of Banda and New Guinea.

Tehor or Taw.

Amboina Island.

AMBOINA is a high island, about 11 or 12 leagues in extent N. E. and S. W., being the largest of those called the Clove Islands, and it is the chief residence of the government of the Molucca Islands. Three small isles, called the Three Brothers, project from its N.W. point in a northerly direction, having safe passages between all of them, also betwixt the southern one and Amboina. The great bay extends about 7 leagues into the island, separating it nearly into two parts. AMBOINA BAY is formed at the entrance by two high points, that of Allang on the west side, and Noessaniva Point to the eastward: they are steep to, situated in lat. 3° 47′ S., and bear nearly East and West of each other, distant 6 or 7 miles. About three cables' lengths from Noessaniva Point in a S. S. E. direction, there is a narrow bank of sand stretching East and West, having soundings of 15 to 50 fathoms on it, upon which a ship might anchor when calm. It is detached from the shore, for no ground is got when Allang and Noessaniva Points are just open, or touching each other.

Amboina Bay.

Inside of Noessaniva Point there is a small concavity, called Portuguese Bay; but no soundings are obtained on either side, at the distance of a cable's length from the shore, nor within half a cable's length in many places, until well up. FORT VICTORIA, on the south shore of the bay, in lat. 3° 40′ S., lon. 128° 15′ E.,* by a series of observations of ⊙ ☽ ∗, taken by Captain Heywood, in two different voyages; these corresponded exactly with his chronometers in a quick run of 11 days from Malacca, in H. M. frigate Dedaigneuse, in December, 1802, which made the flagstaff 26° 0′ E. from Malacca.

Fort Victoria.

Anchorage.

The best anchorage is abreast the town, or rather above the wharf, in from 25 to 40 or 45 fathoms water, on a steep bank, stretching about four cables' lengths from the beach. Close below the fort, a sand projects a little distance, having near it 34 fathoms water.

It is prudent to moor with the anchors nearly up and down the bay, that in case of parting from one, the other anchor may bring a ship up, before she tail upon the shore. As the bottom is foul in several places, this precaution is more necessary; some ships carry a hawser or cable to one of the anchors, placed at convenient distances on the shore, to prevent being driven off the bank. The distance from Fort Victoria, across the bay to the opposite shore, is about 2 miles: there are no soundings in mid-channel, but there is anchorage opposite the town and fort, near the western shore, where a ship may bring up, in case of being driven from the anchorage at the town. There is also anchorage in Dutch Bay, on the eastern shore, about 2 miles below the fort and town.

* This longitude of Fort Victoria is according to the observations of other navigators, beside those of Captain Heywood. The Dutch frigate Maria Reygersbergen's chronometers made it in lon. 128° 13½′ E., measured from Batavia.

The tides in the bay are very irregular, being governed chiefly by the winds, and rise about 6 or 7 feet. The course up the bay is N. E. by E., and the distance from Allang Point to the anchorage at Fort Victoria is about 5 leagues. Tides.

The best time to enter between the heads, in the Westerly Monsoon, is in the morning, betwixt daylight and 8 or 9 A.M.; and by keeping nearly in mid-channel, inclining to the N. Western shore, a ship will generally carry a breeze up to the anchorage off the town. During the night, light variable airs or calms generally prevail, accompanied with an outset, which renders the progress up the bay difficult and tedious; for ships are liable to be drifted about by the eddies, or probably out of the bay, after getting half-way up by a favourable breeze. There is, however, no danger to be apprehended in entering it during the night; for although a ship may seem to be drifting towards the beach on either side by the tides when calm, where no anchoring ground is to be got, yet, when the shore is approached within a certain distance, the ship will generally be set along parallel to it, or drifted off again into the middle of the bay. To sail into the bay.

In the Easterly Monsoon, as the current frequently sets strong past the points of the bay to the westward, a ship coming from this direction ought to work up in the offing until Noessaniva Point bear N. N. E. or N. by E.; she should then steer to round it pretty close, keeping along the southern shore of the bay at a moderate distance, under low sail; for the sudden gusts of wind which come off thehills at times might endanger the masts with light sails set.

A ship may be supplied with water, fruit, and vegetables, at Amboina, but fresh provisions are scarce; bullocks, deer, &c., are brought from Bouro and the adjacent islands at times, for the use of the garrison, but not in sufficient quantity to afford any regular supply to ships. Strong gales are often experienced in the Westerly Monsoon, about full and change of moon, which are generally preceded by a great swell tumbling into the bay. Refreshments.

Inner Harbour, at the upper part of the bay, being well sheltered from all winds, is generally resorted to by small ships at the approach of blowing weather; but the entrance into it being narrow, a pilot is requisite to carry a ship through the channel. This place is considered to be unhealthy, for the crews of ships are sometimes very sickly here, when those in the outer harbour continue healthy. The watering river is on the western shore, about 7 or 8 miles from Fort Victoria, and known by a house on each side of it, at a small distance. With the assistance of hoses, the casks are filled speedily; but a loaded long boat can only float out at high water. Inner Harbour.

The head of the inner harbour is separated by a small isthmus from a bay on the east side the island, which has soundings and some shoals in it, but is not frequented by ships.

The northern shore of Amboina is clear of danger, and the channel betwixt the N. W. Brother and Ceram is 4 or 5 miles wide; but the currents or tides among those islets are strong, and not regular.

HARAUCKA, or OMA, is separated from the eastern part of Amboina by a navigable channel, about a league wide, which is contracted to a mile at the northern entrance, by a sandy islet contiguous to Amboina: this islet is safe to approach, but the Haraucka shore opposite is foul, and there is a fort on the west side this island. Haraucka Island.

HONIMOA, or SAPAROOA ISLAND, lies close East of Haraucka, the channel that separates them being only a mile wide in the narrowest part, destitute of anchorage, Honimoa Island.

and subject to strong currents or tides; a vessel in going through it must therefore keep near the Haraucka shore. The south point of Honimoa, called the Dolphin's Nose, is in lat. 3° 38′ S., distant about 12 leagues E. by N. ½ N. from the entrance of Amboina Bay: there is an islet close to it, called Pigeon Island, and the small island Malana lies about 2 miles to S.W. Separooa Village and Fort Durrstede are situated at the bottom of the bay, which is formed between the South and S. E. points of the island; there is good anchorage in 12 fathoms near the fort in the Westerly Monsoon, by steering in about mid-channel, between the reefs that line both sides the bay, but no soundings are got until within a mile of the fort.

Anchorage.

Noesa Laut.

NOESA LAUT, in lat. 3° 40′ S., lon. 128° 53′ E., is small, separated from the S. E. point of Honimoa by a safe channel, about 2 miles wide; it is the easternmost of the Clove Islands, and produces the best cloves of any of them. Foul ground projects around it to the distance of a quarter of a mile, but there is said to be anchorage at the north part, and off the N.W. part, where there is a fortified house.

Channel between those islands and Ceram.

The four islands above mentioned, generally called the Clove Islands, are of middling height; but the high land of Ceram being near them to the northward, they appear as part of it until closely approached. When a ship is working between them and Ceram, she ought to give a berth to the north part of Haraucka, and the N.W. end of Honimoa, because foul ground projects from them about a mile; whereas, the Ceram shore, abreast these islands, is bold to approach.

Banda Islands.

THE BANDA ISLANDS form a group, ten in number, lying near each other; the harbour is formed by Great Banda on the south side; Goonong Apee, or Burning Mountain, and Banda Neira on the north side; with two isles at the eastern entrance, one called Pulo Pisang, and the other, from its resembling a ship's hull, Pulo Cappel; the latter is very small. These islands, being high, are subject to sudden gusts of wind, with hot, oppressive weather in the day, but the nights are cool.

Anchorage.

The anchorage, in lat. 4° 31′ S., lon. 130° 0′ E.,* is at the foot of the Burning Mountain, which generally emits smoke; shocks of earthquakes are frequent.

Sailing directions.

The eastern channel is safe to enter Banda Harbour, giving a berth of half a mile to the shore of Great Banda, and to that of Banda Neira: a ship may pass on either side Pulo Pisang and Pulo Cappel, and when to the southward of them, the channel is about 3 miles wide. The anchorage is abreast the wharf at Banda Neira, in 7 or 8 fathoms. The Orpheus Bank, which has only 15 feet on it at low water spring tides, will be avoided by not shutting in the eastern point of Great Banda with the low S. E. point of Banda Neira, and anchoring with Pulo Way, or Ay, just shut in with the point of Goonong Apee, and Battakeeka Fort, on the hill N. by E., distant about half a mile off the wharf.

Tides.

It is high water on the shore at 2 hours on full and change of moon, and the rise of tide is about 9 or 10 feet. At the anchorage it is high water at 4 hours, where the tides are strong, but not regular; it is therefore proper to moor immediately.

Ships can only go in by the western channel in the Westerly Monsoon, which is formed between Goonong Apee and Great Banda; a reef projects from the western part of Great Banda to nearly mid-channel, contracting the passage to a quarter of a mile, making it necessary to keep close to Goonong Apee shore, which is steep to. The extreme of Pulo Way kept just *touching open* with the extremity of Goonong

* The frigate Maria Reygersbergen's chronometers and observations made the anchorage in lat. 4° 33′ S., lon. 130° 5½′ E.

Apee will lead a ship to the anchorage. This channel is frequented by ships coming in during the Westerly Monsoon, and by those going out in the opposite season.

There is a passage between Goonong Apee and Banda Neira, but it being very narrow, with rapid tides, and destitute of good anchorage, it is seldom used except by small vessels.

The harbour of Banda bears E. S. E., about 40 leagues distant from Noessaniva Point, at the entrance of Amboina Harbour, and 18 leagues S.W. from Kefling Point on Ceram.

Rosingeyn Island lies about 4 miles eastward of Great Banda; Pulo Way and Pulo Rhun lie to the westward. Pulo Way bears nearly West 7 miles from Goonong Apee, and E. by N. ½ N. 4 miles from Pulo Rhun, betwixt which the passage is said to be unsafe. The northernmost island of the group, called Pulo Swangy, bears nearly N. ½ W. from Pulo Way.

The islands Great Banda, Banda Neira, Rosingeyn, and Pulo Way, produce excellent nutmegs; the soil of these islands being more favourable for the culture of the nutmeg tree than the soil of Amboina.

Banda Neira is well fortified, particularly in the western channel, and here resides the governor of these islands.

Turtle Islands.

THE TURTLE ISLANDS, three in number, are very low; they are covered with trees, and dangerous to approach in the night, being fronted by coral reefs which project 2 or 3 miles from them. The easternmost island is in lat. 5° 25′ S., lon. 127° 38′ E.,* bearing from the entrance of Amboina Harbour S. by W. ¼ W., distance about 33 leagues. The westernmost island is separated considerably from the other two, for the Sibbald had the easternmost island bearing N. N.W. ½ W., distant 10 miles, seen from the deck, with the trees on another island open to the westward of it, just visible from the poop, when the S. Westernmost island was seen from the mizen-topmast rigging, bearing about W. N.W.

Lucepara Islands.

LUCEPARA ISLANDS, or LUCAPIN-HAY, in lat. 5° 40′ S.,† lon. 127° 21′ E. by chronometer from Amboina, lie about 5 or 6 leagues to the S.W. of the Turtle Islands; they form a group of five low isles, covered with trees, and cannot be seen above 4 leagues from the deck. The passage betwixt them and the Turtle Islands is safe in daylight, being 4 leagues wide; the frigate Maria Reygersbergen passed through it with her convoy in 1805, when bound from Batavia to Amboina.

Goonong Apee.

GOONONG APEE, or BURNING ISLAND, in lat. 6° 35′ S., lon. 126° 40′ E., or 1° 35′ West from Amboina Flagstaff by chronometer, bearing S.W. ¾ S. from Lucepara Islands, distant 23 leagues, is a high conical mountain, visible 15 or 16 leagues. It is in a state of ignition, with smoke generally issuing from the crater at the summit, and is bold to approach.

Passage from Amboina to Banda.

SHIPS proceeding from AMBOINA to BANDA during the strength of the Easterly Monsoon, in July, August, and September, should stretch to the southward, and they will generally fetch the coast of Timor. Here the current runs often strong

* Captain Forbes, in the Sibbald, saw these islands, April 20th, 1816, in his passage along the north side of Flores, towards Amboina, and made the easternmost island in lat. 5° 26′ S., about lon. 127° 50′ E.

† The Dutch frigate's observations place this group farther to the N. E., viz. from lat. 5° 27′ to 5° 33′ S., lon. 127° 33′ E.

to eastward in these months, and the wind becoming variable and veering more to southward, enables ships to stand on the starboard tack about N. E. by E., and fetch Banda. This passage may be performed in six days; whereas, the route to the northward of Ceram, and round its eastern extremity, which is generally pursued by the Dutch, frequently requires more than double that time.

Passage from Amboina to Hindoostan, by the northern route in the Westerly Monsoon.

Ships bound from Amboina, or any of the other Molucca Islands, to Hindoostan, ought not to attempt the Southern Passage during the strength of the Westerly Monsoon; if they depart before the month of March, the northern route is preferable, particularly when bound to Bengal or the Strait of Malacca.

Departing from Amboina to proceed to the northern route, ships should endeavour to get over towards the Island Amblaw, and keep the east side of Bouro aboard, that they may benefit by its land winds and squalls, and avoid the S. E. currents which frequently prevail between Ceram and Amboina, and near Manipa, in the Westerly Monsoon. When abreast the north point of Bouro Bay, the wind will generally permit ships to stand over about N. N. E. for Gomona and Oby Major; they should then proceed through the Gillolo Passage, or betwixt Geby and Gagy, as circumstances require. Having cleared this passage, the progress will be slow, for south-easterly currents prevail, with light N.W. and northerly winds, accompanied at times by squalls and rain. Every means ought to be used to get to the northward in this track, without minding if a little easting is made; for after reaching lat. 5° or 6° N., the north-easterly winds may be expected, with which to run to the westward.

Having in these latitudes got within the verge of the North-east Monsoon, the best track is to steer to the northward of the Meangis Islands, for the south point of Mindanao; and after passing between it and the Serangani Islands, a course should be pursued through the Strait of Baseelan, because the winds hang as much to the westward as to the eastward of North. If a ship enter this strait in the morning, with a breeze from the Mindanao shore, she will probably get through before night, if the tide happen to be in her favour; she ought to keep along the north side of the strait betwixt the Santa Cruz Islands and Mindanao, where water and refreshments may be got at Samboangan, if required.

From Samboangan, a W. N. Westerly course ought to be followed, to pass to the North of the Islands Sangboy and Teynga; from thence, steer for Cagayan Sooloo, and having passed it, a course ought to be steered to get into the latitude of Banguey Peak, when 8 or 9 leagues to the eastward of the Mangsee Islands. After passing through this strait, betwixt these islands and the north part of Banguey, a course should be pursued for the Strait of Malacca, agreeably to the sailing directions which are given for those places in the preceding sections of this work, and where the descriptions of them will be found.

Southern route.

Ships from Amboina bound to Hindoostan in March may proceed by the southern passage, and as the winds hang mostly from the westward in this month, it is advisable to stand up towards Bouro, and from thence work over near St. Matthew Islands. Having approached these and Velthoen Island, a southerly course ought to be followed, and if the wind is favourable, it may be prudent for a ship to keep well to windward, and pass through the Strait of Alloo. This strait is preferable to that of Pantar, being much wider, and farther to windward in the Westerly Monsoon; and when clear of it, a ship ought to keep to westward, in order to proceed through the channel between Sandalwood Island and Savu, into the open sea; or she may pass out on the east side of the latter island, if the wind be unfavourable for proceeding through any of the channels farther westward.

Departing from Amboina in April, May, June, July, or August, steer for Burning Island, for in April the Westerly Monsoon fails, and is succeeded by light south-easterly breezes. Care must be taken to give a berth to the Lucepara Islands, in passing towards Burning Island, which may also be left to the eastward; observing that the current sets often strongly to the westward in the Easterly Monsoon: from thence, steer to make the west end of Wetta, or Dog Island, and proceed betwixt Pulo Cambing and the east end of Ombay, and between the latter and Timor, through the Ombay Passage. Being once so far to the southward as Rotto or Savu, the S. E. winds will begin gradually to increase in strength, and a course may be steered to pass out to the southward of Savu. The passage from hence to Hindoostan may be accomplished in from 20 to 30 days by a ship that sails well.

If bound from Amboina, or Banda, to Batavia in these months, you should, if leaving Banda, steer to make the high island of Roma, giving a berth to a shoal that lies about 8 miles off its N.W. point, then pass to the North of Wetta. From hence, steer for Pulo Cambing, and along the north coast of Flores, passing between it and Rusa Raji, if thought necessary, then along the north coasts of Sumbawa and Lombock; having brought the latter to bear to the southward, steer to pass to the north-eastward of Urk, and between Kangelang and the Four Brothers; otherwise, you may steer from Lombock to pass between Hog Island and Galion, and afterwards along the north side of Madura and Java.

VAN DIEMEN LAND.

VAN DIEMEN LAND AND THE CONTIGUOUS PORTS, WITH SAILING DIRECTIONS.

Passage to China outside New Holland.

THE PASSAGE to CHINA round to the eastward of Australia has been described in Volume First of this work, in which directions are given for sailing towards Van Diemen Land, and through Bass Strait, with an account of the principal headlands, islands, the winds, and weather. It seems proper, nevertheless, to give farther directions for sailing into the places of shelter in Van Diemen Land, and those on the coast of Australia, where ships bound to China or to Port Jackson may procure fresh water, or repair any slight injury sustained by stormy weather.

Western coast of Van Diemen Land.

VAN DIEMEN LAND,* on the western side, is generally a rocky shore, of sterile aspect, with reefs fronting it to the distance, in some places, of 3 or 4 miles; and a considerable south-westerly swell usually rolls in upon it from the ocean. In many places this coast is low, but in several parts the inland mountains stretch nearly down to the sea, having a barren and white appearance.

Cape Grim.

CAPE GRIM, in lat. 40° 43′ S., lon. 144° 42′ E., the N.W. extremity of Van Diemen Land, and the southern boundary of the west entrance of Bass Strait, is a

* The south-eastern coast was discovered by Abel Janson Tasman, in 1642, who named it Van Diemen Land; but it was not known to be an island, until Captain Flinders and Mr. Bass, in 1798-9, sailed round it, under the direction of Governor Hunter, who gave the name of Bass Strait to the sea that separates it from New Holland, or Australia.

steep black headland, having two contiguous rocks of similar aspect, and is directly to the southward of Hunter Islands; SANDY POINT, the west extreme of the land, is in lat. 41° 4′ S., lon. 144° 36½′ E. The west coast of Van Diemen Land was thought to be without shelter for ships; but two harbours were discovered, in a vessel fitted out by Mr. Birch, a merchant of Hobart Town, purposely to examine minutely the coasts. She performed the circumnavigation of the island in 39 days, about the end of 1815, and discovered the two following harbours.

and Sandy Point.

Macquarie Harbour.

MACQUARIE HARBOUR (Entrance Island, in lat. 42° 12′ S., lon. 145° 20′ E.), has on the bar only from 5 to 9 feet, at low water spring tides, with a tide of 5 or 6 knots, consequently can only admit small vessels passing over the bar; but when well inside through Kelly Channel, the water deepens to 10, 20, and 25 fathoms, and decreases afterwards gradually, in sailing up this extensive harbour. The brig Sophia,* Captain Feen, after anchoring in 7 fathoms outside the bar to wait for the flood tide, crossed over, keeping the starboard shore aboard, and after deepening to 10 fathoms, proceeded upwards in a narrow channel, between shoals, till 10 miles above the bar; when 20 miles from the bar, the depths gradually decreased to 2 fathoms. Having proceeded about 2 miles farther up in the whale boat, the north bank of the harbour was found to consist of strata of coal, denuded by the sea in some parts: these strata of coal were 6 feet thick, with a stratum of clay between them.

In passing upwards in the boat, the entrance of Gordon River, which empties itself into the harbour, was computed to be about 50 miles from the bar, and in pursuing a course up this river, the first *falls* were discovered nearly 50 miles farther inland; the course of the river being through (what was thought) the western mountains, directly East from the harbour's mouth.

Captain Feen succeeded in sounding a passage, by which any vessel that can cross the bar may proceed within half a mile of the *falls*, and anchor within 10 yards of the coal mine. The mountains on the northern shore, where the coal is, are barren, but the rest are generally covered with myrtle and pine. The brig took in a cargo of Huon pine, by drifting it down the river; this is excellent timber for joiners and cabinet work, boat-building and architecture.

Captain P. P. King, R. N., who in 1819 made a survey of the entrance to Macquarie Harbour, gives the following marks for crossing the Bar. "The centre of Entrance Island, in a line with the eastern pitch of the summit of Mount Wellington, bearing S. 15° E. (*true*). Mount Wellington is on a point, about a mile inside Entrance Island, on the western side, and may be easily recognized by its table top, which is elevated 250 feet above the sea."

In a case of emergency, a ship might anchor in 6 to 12 fathoms in the outer road, and be sheltered from S.W. and southerly winds, by Cape Sorell, which bounds the western side of the harbour's entrance; but she will be exposed to West and N.W. winds, which do not, however, prevail near the land. Cape Sorell is in lat. 42° 11′ S., lon. 145° 17′ E., terminating in a low point of straggling bare rocks, with many patches of rocks or breakers detached from the shore.

Point Hibbs.

POINT HIBBS, in lat. 43° 59′ S., lon. 145° 20′ E., projects about 3 miles from the coast line, having an extensive reef of breakers on the south side, and a remarkable pyramidal rock nearly 3 miles to N. E. About 11 miles S. E. by S. from the point

* Belonging to Mr. D. M'Carty, who was then on board, being his second voyage from the Derwent to Macquarie Harbour.

stands a projecting cliff, with high rocks adjoining, and 2 leagues farther South are some patches of breakers 2 miles off shore. Rocky Point, in lat. 43° 0½′ S., lon. 145° 33′ E., and 7½ leagues S. E. by S. from Point Hibbs, is fronted by a reef. From Rocky Point the coast takes an easterly direction about 3 leagues, and then southerly about the same distance, forming a deep concavity. Rocky Point.

POINT ST. VINCENT, in lat. 43° 16′ S., lon. 145° 55′ E., and 7 leagues S. E. ¾ E. of Rocky Point, having two peaked rocks on its extremity, is a small projecting point of land, 5 miles north-westward of the entrance of Port Davey, having about 6 or 7 miles N. ½ E. from it, in lat. 43° 9½′ S., Mount De Witt, which is visible 11 or 12 leagues. Point St. Vincent. De Witt.

PORT DAVEY, in lat. 43° 18′ S., lon. 146° 0′ E., to the south-eastward of Point St. Vincent, and nearly 7 or 7½ leagues N.W. by N. of the South-west Cape, is of great importance to the navigator, being an excellent harbour, separated into two branches, and extending several miles inland. The principal branch extends in a northerly direction, having moderate depths of water, from 12 to 14 fathoms at the entrance, decreasing to 4 fathoms about 3 miles up, abreast of a bay or lagoon, which there branches off to W. S. Westward. The other branch, called Bathurst Harbour, extends about 3 leagues to the eastward, having several islets in it, with coves or indentations on either side. The shores of this harbour abound with excellent pine, and it has the advantage of a fresh water river. The land on each side the entrance of this port is rugged and barren, and the pyramidal rocks near the South Head must have a berth on the starboard hand, when steering into the harbour; this headland is in lat. 43° 21′ S., projecting about 2 or 3 miles from the contiguous coast line. Port Davey.

SOUTH-WEST CAPE, in lat. 43° 39′ S., lon. 146° 12′ E., is a narrow, steep point, extending about a mile from the high land. The Southern coast resembles the western coast, and the projecting points are generally high, steep, and barren; some of them, consisting of whitish stone, have the appearance, when viewed at a distance, of being covered with snow. There is no inducement for a ship to pass inside the Mewstone, and Maat Suykers Isles, which lie to the eastward of the South-west cape; for although the openings betwixt these and the south cape appear at a distance to afford shelter, they are thought to be shoal bays, exposed to southerly winds: it is therefore proper to give a good berth to the western and southern coasts, particularly in the winter months. South coast.

SOUTH-EAST, or SOUTH CAPE, in lat. 43° 38′ S., lon. 146° 56′ E., bears about *true* East from the South-west Cape, distant 11 or 12 leagues, and has over it peaked hills. South-east Cape and adjacent isles.

A good harbour has been discovered on the east side the South Cape, by Mr. Kelly, in the Henrietta Packet, the southern extremity of its entrance, called the South Head, being in lat. 43° 30′ S. It extends about 20 miles inland, and is said to be capable of affording good shelter for vessels in bad weather; but the depth of water, and other particulars relative to this harbour, have not yet been correctly ascertained.

In the offing, in lat. 43° 51′ S., lon. 147° 8′ E., lie the White Rock and Eddystone, sometimes called Swilly Rocks, which are two in number, and the outermost is generally called the Eddystone. The latter has the appearance of a sail at a distance; the other is a high rock, bearing S. 66° W. from it by compass. There is a clear passage between them, but a ledge projects to a short distance from their north

parts, that from the Eddystone being the longest. The MEWSTONE, in lat. 43° 46′ S., lon. 146° 31′ E., by Captain King's observations, is a high ragged rock, about $3\frac{1}{4}$ leagues off shore; the channel inside of it, and the two rocky Maat Suykers Isles mentioned above, are safe in favourable weather.

Sidmouth Rock.

SIDMOUTH ROCK, discovered by Captain William Gunner, of the ship Lord Sidmouth, March 5th, 1819, is about 4 or 5 miles north-eastward of the Eddystone; the boat was sent to examine this rock, which was found to be about 100 yards in diameter above the surface of the sea,* with a reef projecting from it about half a mile to the north-eastward. No bottom with 20 fathoms line could be obtained in sounding all round the rock, and the passage between it and the Eddystone appeared safe.

Another rock.

A rock above water, said to have been seen by the Russian ship Rurick, in 1822, in lat. 44° S., lon. 147° 45′ E., and 9 leagues E. S. E. from the Eddystone, may probably be the same rock lately laid down in the Admiralty chart, under the name of PEDRA BRANCA.

Tasman Head. Islets off it.

TASMAN HEAD, in lat. 43° 32′ S., lon. 147° 26′ E., bearing N. E. by E. $\frac{1}{4}$ E. from the South-east Cape, distant 7 or 8 leagues, is a rocky headland, with three steep islets and two black rocks off it, called the Friars; between which and Cape Bruny to the westward, Bad Bay extends about 3 miles into the south part of Bruny Island, exposed to the fury of southerly winds. Tasman Head is the southern extremity of Bruny Island, which is extensive, and stretches northward, separated from the S. E. part of Van Diemen Land by a navigable strait, or channel, through which, Admiral D'Entrecasteaux passed in May, 1792, and which is since called by his name.†

D'Entrecasteaux Channel.

D'ENTRECASTEAUX CHANNEL is formed between the South-east Cape of Van Diemen Land and Bruny Island; on each side the entrance, near the land, there are some reefs and small islands. On the western side, near the South-east Cape, is Recherche Bay, with its two ports, called from their relative situation North and South Ports. Admiral D'Entrecasteaux remained here nearly a month, and found it safe, and convenient for procuring wood and water. It is sheltered from most winds by the surrounding mountains, and the bottom is soft mud, with depths of 12 or 10 fathoms well out in the bay, but only from $2\frac{1}{2}$ to $3\frac{1}{2}$ or 4 fathoms when near the shores of either of the harbours. There is a patch of rocks above and under water, in the entrance of the South Port, between which and the N.W. entrance Point there is no safe passage; but the channel on the S. E. side of the patch has depths of 4 to 5 fathoms, shoaling to 3 and $2\frac{3}{4}$ fathoms, where vessels of light draught may anchor on a bottom of fine sand, in perfect safety, and fresh water can be got at a little cove on the western shore.

Port Recherche. South Port.

North Port.

The North Port is about a third of a mile wide at the entrance, and two-thirds inside, extending northward nearly $1\frac{1}{2}$ miles, having 5, 4, and 3 fathoms water, to three-quarters of a mile from the entrance, if not too near the shore. The Pearl, a small rock above water, lies in the entrance, about one-tenth of a mile from the East Point;

* It appears to be covered at times, for Captain Ashmore, in passing near, saw only the breakers on it: this rock, the Eddystone, and White Rock, seem to lie nearly on the same transit line of bearing.

† It seems to have been in the following year, 1793, that Captain John Hayes, of the Company's Bombay Marine, explored the same strait, in the ships Duke and Duchess, and thought it a new discovery. He also explored the River Derwent, which stretches from the north entrance of the strait, a great way inland to the north-westward and westward.

between them, in mid-channel, there are from 5 to $6\frac{1}{2}$ fathoms water, soft ground, with $2\frac{1}{2}$ fathoms near the Pearl Rock, and the same depth also near the point. In entering this port from south-eastward, steer towards the Pearl until abreast a small point of remarkable rocks, which must be passed close, to avoid on the starboard hand a bank of rock-weed, on the centre of which are only $2\frac{1}{4}$ fathoms; then steer for Observatory Point, which is safe: keeping it open on the starboard bow, it may be rounded close, but do not go so far westward of it as to open the Pearl Rock outside the southernmost point of land. The general depth in this harbour is about $3\frac{1}{2}$ fathoms, soft mud bottom, in which ships may ground without danger; the water is smooth in it at all times; the sloping shores are covered with wood, and fresh water may be obtained on the western shore. Observatory Point is in lat. 43° $32\frac{1}{4}'$ S. Variation 7° 39′ E. in 1792. The rise of tide, which flowed only once in 24 hours, was about 6 feet perpendicular, high water from 9 to 12 hours at full and change of moon, but influenced greatly by the winds. Tides.

Cape Bruny, the S.W. point of Bruny Island, lies about 7 miles to the westward of Tasman Head, and has a revolving light on it, the tower of which is white and 44 feet high. The light is 339 feet above high water, and the machinery makes a complete revolution in five minutes; the intervals from light to shade, which form the distinguishing character of the light, are, however, only of fifty seconds duration. Variation 12° 11′ E. (1838). Cape Bruny.

Although D'Entrecasteaux Channel has some advantages, it ought not to be used by ships bound to Hobart Town, except occasionally in the summer season, when sea breezes predominate; because the high hills and intervening chasms on the western side of the channel obstruct the course of the winds, even when they blow strong from the S.W., giving them uncertain and various directions, causing detention, which makes the Storm Bay Passage, at all times, preferable for ships bound to Hobart Town, more particularly in the winter season. The George the Third, convict ship, and soon after the ship Enchantress, with emigrant passengers and a valuable cargo, were both wrecked here in the night. The first was lost on the mid-channel reef, in the Western Passage, between Actæon Island and the main; the other is said to have been wrecked on the Actæon Reefs when entering the channel eastward of the islands; by these lamentable misfortunes, nearly 200 lives were sacrificed and much valuable property.* Since the loss of these ships, the Sir William Wallace was wrecked on Actæon Reefs in the daytime. Directions for the channel.

Captain J. Welsh, who partly explored D'Entrecasteaux Channel, observes, that it has been usual for ships to enter by the Eastern Channel, passing eastward of the reefs that lie across the entrance, about from $3\frac{1}{2}$ to 7 or 8 miles to the eastward and northward of the South-east Cape. These reefs (on which the Actæon was wrecked) have Actæon Island at their northern extreme, and the small isle called Charles Island about 2 miles farther South. The S.W. part of the reefs bears from the Whale Head N.E. $\frac{1}{2}$ N. $6\frac{1}{4}$ miles, and from South-east Cape N.E. $\frac{1}{2}$ E. 3 miles. Although this channel, eastward of these reefs and islands, is the widest and best known, Captain Welsh considers the western channel, or the passage westward of them, preferable with a westerly wind; because a north-easterly course will carry a ship through the latter to Partridge

* The former ship was wrecked in the night, April 12th, 1835, and 134 persons perished, 128 of whom were convicts. The Enchantress struck on the reef, July 17th, 1835, at 10 P.M., and bilged immediately; the long boat, with great part of the crew, is thought to have gone down by entanglement with the wreck. Although in the published account of the loss of this ship, it is stated that she struck on the Actæon Reefs; yet a letter from a nautical officer at Hobart Town, informs me, that she was working in through the Eastern Channel during the night, and her jib-boom was broken by the cliffs of Bruny Island, where she struck against the steep rocks, and then sunk in deep water.

Island, whereas a ship entering by the eastern channel would have to steer a north-westerly course. The passage between the Actæon Reefs and Isles on one side, and the western shore on the other, is safe in daylight, by rounding the South-east Cape within $1\frac{1}{2}$ miles, and afterwards keeping at a moderate distance from the western shore, on account of a reef of rocks that lies in the direction of the passage, about a mile off Eliza Point, and $2\frac{1}{4}$ miles to the westward of Charles Island and Actæon Island, fronting the opening between these islands: this mid-channel reef is about 300 yards in extent, and may be safe to pass on either side, having 5 fathoms water close to it, and from 7 to 10 fathoms clear ground between it and the western shore, and also between it and the Actæon Reefs. Several patches of rock-weed will be perceived in the passage, which indicate foul ground, but the least water Captain Welsh found on them was 5 fathoms. Point Arthur, about 2 miles from South-east Cape, forms the southern entrance point of Recherche Bay, and a ship having entered the channel between the Actæon Reefs and Point Arthur, should steer to pass on either side mid-channel reef, that fronts Eliza Point; afterwards, leaving two small rocks on the larboard side, the channel formed by the high land of the South Port to the West and Bruny Island to the East will soon be entered; here there is good anchorage in from 10 to 14 fathoms water, and hence, she may proceed through the strait to Hobart Town.

D'Entrecasteaux Channel was navigated in February, 1827, by H.M.S. Rainbow, Captain the Honourable H. J. Rous, in proceeding to Hobart Town; he gives the following description:—

Actæon Reef. Directions.

"The entrance of this channel is bounded on the west side by the Actæon Reef, or rather several reefs of rocks under water, in the form of a horseshoe, very extensive, the eastern elbow of them bearing from South-east Cape E. $\frac{1}{2}$ N. full 6 miles. Therefore, ships entering this channel from the S.W., after passing South-east Cape, should steer E. $\frac{1}{2}$ S. 7 miles at least, or until Cape Bruny bears N. by E., when they will be to the eastward of the reef, and may haul in N. N. W. with a westerly wind: but with a southerly wind, a N. by W. course made good will lead nearly in mid-channel in 15 to 20 fathoms water up to Partridge Island, where the channel takes a north-easterly direction, and is free from invisible danger to its termination in the entrance of the Derwent, excepting the shoal bank to the northward of Huon River, on the western coast opposite to Point Riche and Isthmus Bay, which does not extend far out from the shore, and is now buoyed off to $3\frac{1}{2}$ fathoms water. With the wind from westward, it is prudent to close reef the topsails, as sudden squalls then burst from the mountains in tremendous gusts."

Since the Lighthouse has been erected on Cape Bruny the following directions for the entrance of D'Entrecasteaux Channel have been issued from the Port Office, Hobart Town.

"Vessels coming from the westward, unless they have a pilot, are recommended in no case to pass between the Actæon Reefs and the western shore; but having arrived abreast the Whale Head, they are to bring that Head to bear S.W. by W. $\frac{1}{4}$ W., and not open it to the southward of that bearing before the lighthouse on Cape Bruny bears N. by E. $\frac{3}{4}$ E., at which time the S. E. break of the Actæon Reefs will bear W. $\frac{3}{4}$ N. $2\frac{3}{4}$ miles, from which position a N. by W. course will lead in mid-channel clear of all danger. In baffling or working winds, vessels should keep on the eastern shore, which may be boldly approached. Several reefs and rocks being on the western shore higher up than the Actæon Reefs, it is necessary to approach that shore with great caution until Muscle Bay is open, and the light on Cape Bruny is brought to

bear E. $\frac{1}{2}$ S. After the vessel is above Muscle Bay, the shore on either side may be approached to half a mile. Vessels working in the channel must be careful to keep the lead going, and not approach Actæon Reefs to less soundings than 20 fathoms."

D'Entrecasteaux Channel or Strait, from Point Arthur to its union with the Derwent, is about 13 leagues in length, in a N. E. and N. N. E. direction, having several bays or harbours on the east side, where ships may be sheltered from nearly all winds; the strait affords anchorage in many places, in from 20 to 8 or 6 fathoms, mud mixed with sand, but rocky in some parts near the shoals or islands. There are several isles in the strait, but not many hidden dangers. Fresh water may be obtained at some of the brooks which run from the western shore into the coves near the north part of the strait, and also in a bay at the S.E. part of it; but it is difficult to get the casks to the boats, on account of the muddy shores.

If a ship encounter a gale of wind from S. E., when crossing between the South-east Cape and the south point of Bruny Island called Tasman Head, and find any difficulty in clearing either of these headlands, she may run directly to the northward, passing near Cape Bruny, and then into the south entrance of D'Entrecasteaux Strait, and haul round Partridge Island, that fronts the N. E. point of the entrance, where she will find tolerable shelter in Great Cove, which is the bay eastward of the point and island.

The bays on the western side of the strait explored by the French are the following: Muscle Bay, about 6 miles north-eastward of Recherche Bay, having 3 islets or rocks off its southern point; this is about $2\frac{1}{4}$ miles in extent to the westward, with 14 fathoms water in the middle, and 6 fathoms near the southern shore. There are 4 and 5 fathoms, fine sand, to the southward of some islets or rocks well up the bay, and a narrow channel leading into a lagoon to the north-westward. Close to the north point of the bay lies a small rock above water, from which Cape Bruny bears S. 59° E., distant $5\frac{3}{4}$ miles. Muscle Bay.

Esperance Bay, $6\frac{1}{2}$ miles N. N. Eastward from Muscle Bay, is about $1\frac{1}{4}$ miles wide, and above 4 miles in extent, first in a N. W. and afterwards in a S. W. and West direction. Lahaye, a small island, about three-quarters of a mile within the entrance, and about half a mile in length, and covered with trees, has a small islet contiguous to its north side, between which and the north point of the entrance there are from 15 to 7 fathoms water. Lahaye Island is about half a mile from the south shore; between these the depth is from 15 to 25 fathoms, over sand and mud, where a ship may be sheltered from all winds: and S. W. from the island there is a narrow but deep bay, between high mountains, and closed by a sort of ravine. At the bottom of this bay there is a rivulet of good water, with depths of $7\frac{1}{2}$ fathoms in the entrance, $4\frac{1}{2}$ in the middle, and $2\frac{1}{2}$ at the bottom of the bay, with sufficient shelter for heaving a vessel down. Esperance Bay.

HUON RIVER, 4 miles to the N. N. Eastward of Esperance Bay, is about $1\frac{1}{4}$ miles wide, the river extending thence N. W. by W. $\frac{3}{4}$ W. 7 miles, afterwards N. $\frac{1}{4}$ E. nearly an equal distance. Huon River.

Port de Cygne, or Swan Port, about $1\frac{1}{2}$ miles from the entrance on the north side the river, extends inland above 4 miles in a northerly direction, but is much less in breadth; several small bays branch from it on each side; in these, in some places, natural quays are formed, fit for careening the largest vessels. There are from $3\frac{1}{2}$ to 7 fathoms water in the middle of the harbour, over a bottom of mud and sand; and seldom less than 3 to 4 fathoms are found at the distance of a musket-shot from the shores, excepting in some of the little bays: but fresh water is scarce, and not good. Swan Port.

Huon Island fronts the entrance of the river of this name, having rocks between it and the western shore, and $1\frac{1}{2}$ miles eastward of the island lies Arch Rock, which is small and perforated: from the same island, Satellite Island is $3\frac{1}{2}$ miles E. by S. $\frac{1}{4}$ S., and Partridge Island is distant 6 or 7 miles S. by W. $\frac{1}{2}$ W. Point Riche, on the east side of the strait which bounds the western side of Isthmus Bay, bears N. N. E. $\frac{1}{4}$ E. from Satellite Island, distant $5\frac{1}{2}$ or 6 miles. Cape le Grand, on the same side, bears from Point Riche N. by W. about 4 miles, and Green Island bears N. $\frac{3}{4}$ W. $2\frac{1}{2}$ miles. Cape Grequel, on the western shore, bears North from Point le Grand 5 miles, and from the former, Point Pierson bears N. N. E. $\frac{3}{4}$ E. 3 miles. Between these points is contained the large bay called North-west Port. Point Pierson, on the main, and Cape Sortie, the north point of Bruny Island, form the north entrance of D'Entrecasteaux Strait or Channel, about three-quarters of a mile in breadth, which there unites with the mouth of Derwent River.

North-west Port.

North-west Port.

NORTH-WEST PORT extends 5 miles inland, its entrance is 2 miles wide, formed by high rocky points on each side, but in other parts the shores are less elevated, and easy of access: several small rivers fall into it, the largest of which was obstructed by banks and large trunks of trees, rendering the approach difficult for boats, and the water was found of inferior quality, although drinkable in case of necessity.

Adventure Bay.

ADVENTURE BAY, on the east side Bruny Island, contains good anchorage in 10 or 12 fathoms, mud, but it is exposed to the swell when the wind blows from the eastward; fresh water is not easily procured, on account of the great surf that usually rolls in upon the beach, although there are two rivulets a little inside the point, at the south end of the bay.

Penguin Island.

A narrow neck of land separates this bay from Isthmus Bay, in D'Entrecasteaux Strait; Penguin Island, which lies close to the point that forms the southern part of the bay, is in lat. 43° 21′ S., lon. 147° 32′ E. Fluted Cape, near Penguin Island, about 10 miles to the northward of Tasman Head, and Cape Frederick Henry, about 8 miles North of Fluted Cape, form the two entrance points of Adventure Bay.

Storm Bay.

STORM BAY, the best approach to the River Derwent and Hobart Town, is extensive, and formed between Cape Frederick Henry and Cape Pillar; the latter being about 7 leagues eastward of the former, in lat. 42° 12′ S.: but Cape Raoul, about 3 leagues to the West of Cape Pillar, seems to be the true boundary of Storm Bay, on the eastern side; for Maingon Bay occupies the space between these two capes, having the deep inlet of Port Arthur at its northern extremity. This port, situated between these two high columnar capes, and 4 miles to the N. Eastward of Cape Raoul, was first explored by Captain J. Welsh, and named Port Arthur; its entrance was found to be rather more than half a mile wide, extending from thence $3\frac{1}{2}$ miles northward. The eastern shore is nearly a direct line, but coves are formed on the western side, which will afford shelter to the largest ships. The first is called Safety Cove, the next Opossum Bay, in the N.W. part of which there is a small creek, called Stewart Harbour. The depths are from 26 fathoms in the middle to 8 or 7 fathoms on each side; and Captain Welsh observes, that this port is easy of access, and will afford shelter for any number of ships, the bays on the western side having good anchorage, where fresh water is easily obtained, and plenty of fish of various kinds. All the bays, excepting Safety Cove, are encircled at the upper part by soft banks of sand and mud, most of them dry at low water. The harbour is surrounded by an amphitheatre of mountains,

Port Arthur.

extending from Cape Raoul to Dolomieu Bay,* forming a barren chain about 3 miles from the sea.

Cape Pillar is named from a rock on it like a pillar, and close to its south point lies Tasman Island and a rock: the island is visible 12 leagues. Storm Bay is a deep gulf, stretching to North and N.W., with a large bay at its northern end, called North Bay, having a branch called Pitt Water at its north extremity; the N. E. angle forms a great elbow to the Eastward and S. Eastward, called Norfolk Bay, being an extensive land-locked navigation, with depths from 9 to 5 or 4 fathoms. Burnet Harbour, on the east side of Storm Bay, about 3 leagues to the N. N.W. of Cape Raoul, is narrow and rocky at the entrance, with 6 to 8 fathoms water inside, but seems only to admit small vessels. At the western angle of Storm Bay there is a channel of 10 and 12 fathoms water, leading into the north entrance of D'Entrecasteaux Strait, and into Derwent River. If bound to Hobart Town, or if a ship be suddenly taken with a S. E. gale between Tasman Head and Cape Pillar, she may with safety steer to the northward round Cape Frederick Henry, then to the N. Westward for the Derwent, and after rounding Iron Pot Island and Cape Direction, on the north side the entrance, she may haul to the northward into Derwent River, which is safe and navigable for ships to a considerable distance upwards beyond Hobart Town. Cape Pillar. North entrance of D'Entrecasteaux Strait. Directions.

The entrance to DERWENT RIVER, formed between Cape Sortie and Iron Pot Island, is 2 miles wide, with depths of 10 to 12 fathoms: Iron Pot Island is small, with a lighthouse on it, and encircled by a reef, which unites it with Cape Direction, on the east side of the entrance. Having entered between Iron Pot Island and Cape Sortie, the channel takes a northerly direction to Hobart Town, distant about 3 or 3¼ leagues, and is safe, with moderate depths for anchorage. The river for 4 or 5 miles above the entrance continues about 2 miles wide, to the south point of Double Bay, on the eastern side, the entrance of which is nearly 2 miles wide, and the bay inside extends 6 miles North and South, and is 2½ miles in depth, with soundings from 7 to 2 fathoms. Ships approaching Storm Bay from the westward ought to give a good berth to the rocky islets off Tasman Head, and when past Fluted Cape, Mount Table will be seen, which is high, and resembles the mountain of this name at the Cape of Good Hope. Betsey Island, being high, will soon be perceived in proceeding up the bay, which lies 3 miles eastward of Iron Pot Island; between the latter and Cape Direction there is no passage for a ship. Having rounded Iron Pot Island, and then fairly into the Derwent, steer about N. by W. for a low sloping point on the western shore, and when abreast of it, the town will open in view to the westward. Derwent River.

Sullivan Cove, the anchorage of Hobart Town, has from 9 to 4 fathoms over a bottom of soft mud; but the anchorage is good anywhere off the town, in from 12 to 9 fathoms, taking care to give the jetty, where the wharfs are, a proper berth, as a ledge of rocks projects about a cable's length to the eastward, having on it only 10 feet at low water. Sullivan Cove.

Shoal Point, about 3 miles above Hobart Town, on the western shore, is the only danger, to which a berth must be given, by keeping nearest to the cliffs on the opposite side, in such ships as proceed to Risdon Cove, which is 4½ miles above Hobart Town. Here the river is contracted to half a mile in width, and in sailing up thus far, Mount Direction is very conspicuous ahead, having a gap at the top; it is in lat. 42′ 48° S. Risdon Cove lies below this mount, where fresh water may be got, and a vessel drawing more than 9 feet ought not to go higher, because the river becomes very shoal, and contracted by banks.

* One of the bays on the east side of the peninsula, exposed to seaward.

Hobart Town. Hobart Town, in lat. 42° 54′ S., lon. 147° 28′ E., the seat of Government, was built on the west bank of the river, by a colony from Port Jackson, on a gently sloping plain at the foot of Mount Table, and a communication is established over land between it and Launceston on the River Tamar, which falls into Port Dalrymple, on the northern coast. Hobart Town is now a place of great importance, on account of its excellent harbour, and of its being well situated for trade. The surrounding country produces excellent wheat, barley, and other grain, the soil being remarkably fertile; there are also mines of marl and lime, and the climate is very favourable for agriculture, so that Van Diemen Land has great natural resources.

The tide in Derwent River is irregular, rising at times 7 or 8 feet, but usually only 4 or 5 feet, and the time of high water is said to precede the passage of the moon over the meridian on any day about 4 hours, but this seems very uncertain: the stream in the river is irregular and weak, seldom more than half a knot. In the upper part of the river, where the water is fresh, flocks of black swans formerly used to feed on the long grass which grew on the mud-banks. A lighthouse, elevated 70 feet above the sea, has been built on Iron Pot Island, at the entrance of the Derwent, exhibiting from dark to daylight a fixed light, which may be seen 4 or 5 leagues from a vessel's deck; and it bears W. by N. ½ N. from Cape Raoul, and N. N. W. from Cape Frederick Henry.

In the middle of Storm Bay entrance there are 35 fathoms water over sandy bottom, and near Cape Raoul 50 fathoms, the depth decreasing towards Bruny Island, the western boundary of the bay; and also in proceeding northward, there is a gradual decrease to 30, 20, and 12 fathoms in approaching Betsey Island, from which a reef is said to project nearly a mile to the southward. When near Cape Direction (which appears like a low island), if a strong N.W. wind prevent a ship working into the Derwent, she may run up to the eastward of Betsey Island, and anchor in North Bay; or otherwise pass to the eastward round Sloping Island and Green Head into Norfolk Bay, then anchor on the S. E. side of Smooth Island, about 5 miles East from Green Head, where she will be well sheltered between it and Stony Hill Point in 5 or 6 fathoms; fresh water can be got at the bottom of the bay, directly East from Smooth Island, and N. E. from Stony Hills.

THE EAST COAST OF VAN DIEMEN LAND, from Cape Pillar, its South-east point, to Cape Portland, its North-east point, lies in its general direction nearly North and South, and comprehends about 2½ degrees of latitude.

Coast adjacent. The coast from Cape Pillar runs northerly about 10 leagues to Oyster Bay: in the interval are several bays, and Port Frederick Hendrick, which port is unsafe for large vessels. This coast presents the same bold steep shore as that fronting the S. E. coast.

Oyster Bay. Oyster Bay, in lat. 42° 40′ S., lon. 148° 8′ E., is formed on the west side Maria Island; this island is of considerable size, separated from the east coast of Van Diemen Land by a strait about a league wide. The best channel appears to be from eastward, round the north side of the island, where the depths decrease regularly from 20 to 6, 5, or 4½ fathoms, in sailing through the passage to the anchorage, which is in 5, 4, or 3½ fathoms, at the entrance of the bay; and inside, the depths are only 2 or 2½ fathoms. There is a pool of fresh water* close to the southern shore, and another near the Peaked Mount, on the neck of land that separates this bay from Riedle Bay on the east side of the island.

From the north end of Maria Island, about 4½ leagues N. by E. ¼ E., lies the south extremity of Schouten Island, which nearly joins to Freycinet Peninsula, the two

* Monsieur Freycinet could not find any water here in the dry season.

forming the eastern side of the GREAT BAY OF FLEURIEU, discovered by Captain Badin. This spacious bay extends 15 miles North and South, and its breadth is 10 miles, with moderate depths for anchorage, but it is open to southerly winds. Freycinet Peninsula and Schouten Island are high and sterile towards the sea, but low and woody on the western side; and the north part of the bay is low, with a sandy shore. There is a small stream of good water at the south end of Schouten Island, in lat. 42° 19′ S., accessible for boats. *Fleurieu Bay and Freycinet Peninsula.*

CAPE PORTLAND, in lat. 40° 45′ S., lon. 148° 0′ E., is the N. Eastern extremity of Van Diemen Land, between which and Freycinet Peninsula the coast extends nearly North and South, mostly high inland, apparently without harbours: there are some hummocks near the cape, with high land in the interior, but the circumjacent coast is generally low. From Cape Naturaliste, the eastern extremity of the land of Cape Portland, in lat. 40° 53′ S., the coast extends 5 or 6 leagues to N. Westward, a reef projecting several miles from the latter headland, and some islets; there are the Swan Isles also 6 or 7 miles to the eastward, having a small channel between them and the cape land. *Cape Portland.*

THE NORTH COAST of Van Diemen Land, comprehended between Cape Portland, just described, and Cape Guin, formerly mentioned, is about 150 miles in extent, these two extreme capes being nearly on the same parallel, and the coast between them forming a curve to the southward; it has generally smooth water along it, the prevailing winds being off the land, and the long S. Westerly swell outside being deflected over from Hunter Islands towards the coast on the north side of Bass Strait. From Cape Portland to Point Waterhouse the coast forms a deep bay, 5 leagues in breadth; it is supposed to be clear of danger, but is open to north-westerly and northerly winds. Waterhouse Island, lying off the point of the same name, is the largest island near this part of the coast, and has a channel of 2 miles wide inside it, with depths of 5 and 6 fathoms; but it seems only fit for small vessels. *North coast of Van Diemen Land.*

The coast from Point Waterhouse runs W. S.W. towards Port Dalrymple at the entrance of the Tamar River, is generally low and sandy, with mountains inland. A small island called Ninth Island, in lat. 40° 51′ S., lies about 5 miles off Double Sandy Point, and 10 miles W. by S. ½ S. from Waterhouse Island; and there is another small island called Tenth Island, in lat. 40° 56′ S., lon. 147° 0′ E., 4 or 5 leagues further to the south-westward, within 3 miles of Stony Head.

PORT DALRYMPLE, at the entrance of the RIVER TAMAR, is rather intricate for a stranger to enter, on account of numerous shoals. Low Head, on the east side the entrance, is the projecting part of a piece of sloping land, in lat. 41° 3½′ S., lon. 146° 49′ E.; but Captain Flinders made it more easterly by some lunar observations. Near the flagstaff on Low Head, a lighthouse has lately been erected, of conical form, with a ball of 20 feet diameter, which is lighted by oil lamps, each having a tin parabolic reflector; the lantern is about 135 feet above the level of the sea.* The following are the bearings taken from it. Hebe Reef W. 5° S.; West Head W. 19° S.; Windmill at George Town S. 32½° E.; Barren Joice, or Tenth Island N. 41½° E.; Five Mile Bluff N. 49° E. The entrance of this port is not easily discerned; but the chains of hills projecting from the inland mountains on each side, and approaching *Port Dalrymple.*

* According to the Australian papers, as quoted by the Nautical Magazine, this is a revolving light, and is 150 feet above the sea.

nearer to the sea than they usually do in this neighbourhood, will help navigators to find it, and the flagstaff on Low Head may be seen at a great distance. When the entrance bears S. Eastward, that chain which comes to the back of Low Head appears as a cluster of irregular hills, with the blue tops of the higher mountains peeping over them. The ridge on the west side the port has a similar appearance, being formed by peaked hills of uncouth shape; and the stony head to the eastward, mentioned above, is the only projection on the east side of the port that is not sandy.

This port being difficult of access, most of the shoals covered at half tide, the best time to enter is with, or a little before, the first of the flood, keeping a good look-out for discoloured water from the mast-head; but it would be imprudent for a stranger to enter among the reefs without a pilot, who will come off on the signal being made. The survey of the River Tamar and Port Dalrymple by Captain J. Welsh, published by the Admiralty in 1831, may be useful to a stranger proceeding to that port.

Hebe Reef.

Hebe Reef, on which the ship of this name was wrecked, June 15th, 1808, was thought to be the outermost shoal off the entrance of Port Dalrymple; it is distant $3\frac{1}{2}$ miles* West from the lighthouse on Low Head; there is said, however, to be a bank of 3 or 4 fathoms bearing N. $\frac{1}{4}$ W. from Low Head, $3\frac{1}{2}$ or 4 leagues, and 3 leagues W. by N. $\frac{1}{4}$ N. from Tenth Island. The Hebe got on the shoal at high water, and had not less than $2\frac{1}{2}$ fathoms on it, the swell being rather high at the time; but at low water, spring tides, the sea upon it appears discoloured.

Captain Kent, of H. M. Ship Buffalo, many years ago, placed three beacons on the shoals at the entrance of this port, and furnished the following directions.

Capt. Kent's directions for Port Dalrymple.

Steering in for Port Dalrymple, and being within $1\frac{1}{2}$ miles of Low Head, and a little westward of it, look out for a beacon with sheers on its top, placed on the east part of the easternmost of the western shoals. Bring this beacon on with the centre of the harbour, that is, the opening between the trees as high up as Green or Garden Island, steering by compass S. E. by S. until within half a mile of the beacon; this will clear the rock and shoals to the westward, part of which are always dry, and also clear the Middle Ground and patches of weed. which stretch out from Low Head. Look then out for a beacon placed on a *half-tide* rock, lying a full cable's length from the inner part of Low Head, towards which stand over, observing to give the sheer beacon a good berth, because there is a patch rather more than a cable's length eastward from the beacon, having only 1 fathom on it at low water; and there are $2\frac{3}{4}$ fathoms between them. The half-tide rock beacon is a cask placed on an iron bar, about 14 feet high, and the west part of the rocks may be approached within 30 or 40 yards in any ship. From hence you may run up to Lagoon Bay, taking care not to haul too much eastward, as there is a patch of $2\frac{3}{4}$ fathoms more than a cable's length above the beacon. As Lagoon Bay is rather exposed, it is best to run up to Outer Cove, or above it, before anchoring, for the bottom between Low Head and Outer Cove is hard or rocky.

As the winds prevail from N. W. to S. W., which are unfavourable for going out of the harbour, a ship will, therefore, probably be obliged to *kedge*, or *back* and *fill* out with the tide. During 24 days' stay in this port, Captain Kent, never found the tide run above $2\frac{1}{2}$ or 3 miles per hour, in the channel betwixt Garden Island and Outer Cove; but it is sometimes stronger.

The depths among the patches of weed, which extend from Low Head over towards the western shoals, including the Middle Ground, are from $1\frac{1}{2}$ to $2\frac{1}{2}$ or 3 fathoms; above Garden Island, the bottom is all mud. Firewood abounds in this port. Fresh water may be got at the back of the beach near Low Head, and there is excellent water in the western arm, above George Town.

* About $2\frac{1}{2}$ miles by Captain Welsh's chart.

Captain Welsh, who surveyed the River Tamar, gives the following directions for entering it. Upon the Hebe Reef, a beacon surmounted with a broad vane has been placed, bearing from the flagstaff on Low Head W. 2° S., distance about 3½ miles: also another on the sunken rock within the head, called the Barrel Rock, with a broad sheet of tin, facing the western channel, and painted white. There is a safe passage between Hebe Reef Beacon and Point Flinders,* with soundings of 7, 10, and 14 fathoms: to sail through, it must be observed, that Hebe Reef Beacon is placed on the western extreme of the shoal, and the channel is about 1¼ miles wide; keep in mid-channel or rather nearest to Hebe Reef, and steer for the flagstaff on Low Head, till the outer beacon at the entrance of Tamar River is *on with* the mill at George Town, which will lead clear of the Yellow Rock.† Having the outer beacon and mill *in one*, steer for the beacon till you enter the western channel, then pass between the outer beacon and that on the Barrel Rock, keeping mid-channel. The latter part of the ebb and first of the flood tide sets directly from Low Head over Hebe Reef. Capt Welsh's directions for the River Tamar.

The rise of tide is from 12 to 7 feet in the springs; high water on full and change, at 11 hours 15 minutes at George Town, or on any day about half an hour before the moon passes over the meridian, and the ebb runs out nearly 7 hours; the tides set irregularly on, over, and through, among all eastern and western shoals at the entrance of the port. Tides.

About 6 leagues westward of Low Head the variation was 8° Easterly in 1798; and 8½° Easterly at George Town in 1830. George Town fronts Garden Island, and is at the head of the cove on the eastern side the river; and Launceston, the chief settlement on the northern part of Van Diemen Land, is nearly 30 miles farther up the river, which is navigable for vessels of moderate size within a small distance of that place, or up to Swan Point, which is 5 leagues below Launceston. But ships of considerable burthen can now proceed up to the wharf at Launceston.

PORT SORELL, in lat. 41° 9′ S., lon. 146° 34′ E., is about 11 miles to the S. Westward of Port Dalrymple, and under the east end of the rugged range called Asbestos Mountains, where it is thought a ship might conveniently obtain wood and water; but not having been sufficiently examined, the depths of water and other needful information are wanting. Rocks front both sides of the entrance, and a little to the West of mid-channel is the best track in sailing in or out of the port, which, within the narrow part of the entrance, opens to a width of 2 miles, and is apparently clear of dangers to the same distance upward. About 2 miles within the entrance, and mid-way between the shores, there is a small island, which must be passed on the east side, it being connected with the western shore by a shoal. Both shores above this island are fronted by shoals, making it necessary to keep in mid-channel, if a vessel proceed above the island; this, however, ought not to be attempted until this part of the channel is surveyed. This port, from its entrance, extends directly to the S. E. about 3 leagues, and about a mile from its termination on the western side there is a small branch not examined. Port Sorell.

From Port Dalrymple to Circular Head, in lon. 145° 15′ E., the coast is clear of islands, with the exception of one or two very small ones lying near the shore.

* Point Flinders lies about 2¼ miles to the S. W. of Hebe Reef, from which point the low shore to the eastward is fronted by shoal water and reefs to the distance of 1½ miles: there appears to be some doubt as to the extent of the Hebe Reef, and as to the safety of the channel to the southward of it.

† In the chart of the river by Captain Welsh, the Yellow Rock, marked with 1½ fathoms, is placed South from the western edge of the Middle Ground, and the channel between them not above a quarter of a mile wide; and the outer beacon and mill at George Town, *in one*, as marked on the chart, leads directly on the Middle Ground, instead of clear through the channel; therefore, either these directions by Captain Welsh, or the chart, is erroneous.

Table Cape.

TABLE CAPE, 40 miles W. by N. of Port Sorell, is in lat. 40° 56′ S., and has a flat aspect with steep cliffs, which may be discerned 12 leagues, and Roundhill Point between them. From Table Cape westward, the country appears sterile, and may be considered low and level at the western part, rising gradually to the eastward. From Table Cape to Port Dalrymple the inland country is mountainous, generally of fertile aspect, and well covered with wood down to the sea. About 5 leagues eastward of Table Cape, a round hill stands close to the shore; and a few miles beyond it, a range of mountains extending from S. Westward terminate abruptly in a bluff head, but this head projects little beyond the line of the coast. From hence eastward to Port Dalrymple the land near the sea is generally low.

Rocky Cape.

ROCKY CAPE lies nearly mid-way between Table Cape and Circular Head, and is surrounded by rocks, as its name implies.

Circular Head.

CIRCULAR HEAD, lies 8 leagues W.N.Westward of Table Cape, in lat. 40° 43′ S., lon. 145° 15′ E., and may be seen about 8 or 9 leagues; it is the first projecting headland eastward of Cape Grim, the N. Western extremity of Van Diemen Land; and the large, low, sandy south island of Hunter Group lies between them, united to the main by shoals.

Hunter Islands.

HUNTER ISLANDS, near the N.W extremity of Van Diemen Land, are a group of three large islands, with some smaller ones, and many islets or straggling rocks, fronting them to the westward: they have a barren aspect, and there *possibly* may be some rocks or dangers westward of them, not yet explored. The Black Pyramid, in lat. 40° 31′ S., lon. 144° 22′ E., is the westernmost island of this group. Albatross Island is the N. Westernmost, in lat. 40° 25′ S., lon. 144° 35′ E., and may be seen about 6 leagues. A ship steering for Bass Strait with a southerly or S. W. wind might, if necessary, keep in lat. 40° 25′ S. to fall in with Albatross Island, after which, Three-Hummock Island would immediately appear to the eastward, and remove any doubt concerning the land. But it is not advisable to enter this channel, except in daylight, with steady weather and a good look-out, as Reid Rocks extend in patches from lat. 40° 13′ to 40° 18′ S., bearing E. S. E. 4 or 5 leagues from the south point of King Island; and although there are 30 fathoms water between these rocks and the point, this passage is also contracted by rocks and foul ground, projecting a considerable way from the south end of King Island. Bell Rock, distant about 2 leagues southward from Reid Rocks, has been described in Volume First of this work.*

To sail into Bass Strait.

The channel northward of King Island is therefore preferable, being clear of danger, excepting the Harbinger Reefs, which are two large patches of rocks, distant 3 or 4 miles W. N.W. of the north point of King Island, described in Volume First of this work; the sea generally breaks high upon them, and there is a passage between them and King Island. The north point of the latter bears about S. S. E. ½ E. from Cape Otway, leaving a passage of 13 or 14 leagues between that cape and the Harbinger Reefs, with 52 fathoms, sand and broken shells, in mid-channel. Cape Otway is in lat. 38° 50′ S., lon. 143° 32′ E., and is a high promontory of red-coloured cliffs, with hills rising gradually above them, and covered with verdure; there is a reef projecting 1½ miles from the pitch of the cape. But great caution ought to be

Cape Otway.

* The following positions of these dangers are given by Captain Wickham, R. N. :—Bell Rock lat. 40° 23′ S., lon. 144° 7′ E.; Reid Rocks (centre) lat. 40° 15′ S., lon. 144° 9′ E.; Black Pyramid lat. 40° 28′ S., lon. 144° 19′ E. Captain C. R. Drinkwater Bethune, of H.M.S. Conway, places a rock in lat. 40° 24′ S., lon. 144° 0′ E.

observed in running for the channel during the night, if the latitude of a ship is not correctly known: a melancholy instance of its necessity occurred on the night of May 13th, 1835, when the Neva transport, Captain Peck, struck on the Harbinger Reefs, and broke into fragments in a few minutes; she was steering at the time N. Easterly, with a strong W. N.W. wind, her latitude by computation being 14 miles in error, too far North. There were on board 150 female prisoners and 33 of their children, 9 free women with 22 children, and a crew of 26 persons. Only 15 were saved out of 241 individuals, by clinging to pieces of the wreck, on which they drifted to King Island. She sailed from Cork, January 8th, bound to Sydney with female convicts and children. About 8 leagues East of King Island the variation was 8° 30′ East in 1802.

FURNEAUX ISLANDS, separated from Cape Portland by Bank Strait, form a great chain, extending about N. N.W. and S. S. E., and are situated at the S. E. part of Bass Strait. Cape Barren, the S. E. extremity of the island of this name, which is the southernmost large island, is in lat. 40° 25′ S., lon. 148° 26′ E., and the peak on this island, with the ridge of hills that extends nearly to the cape, may be discerned about 10 leagues. Soundings stretch a considerable way out from these islands, over a sandy bottom; their western sides generally present a steep rocky shore to the prevailing winds and sea, but their eastern sides usually slope down gradually into a sandy beach. Clark Island is the southernmost of the chain, its south extreme being in lat. 40° 34′ S., and it forms the north boundary of Bank Strait, which is about 3 or 3½ leagues wide between it and Swan Islands, fronting Cape Portland. Armstrong Channel, formed between the south coast of Cape Barren Island and Clark Island, is narrow, with shoals on each side; and, although navigable by small vessels, ought not to be chosen in a large ship, as in some parts the depths are only 2½ or 3 fathoms. Furneaux Islands. Cape Barren.

Preservation Island, situated at the western entrance of Armstrong Channel, has anchorage in from 3 to 5 fathoms, off the sandy beach on its eastern side, open only to southerly winds. The variation here was 9° easterly in 1802.

Great Island, the largest and northernmost of the chain, is high on the west side, formed of barren peaked hills of various shapes: betwixt it and Cape Barren Island there is a narrow strait, with many rocks and islets in it: Babel Island lies contiguous to the east point of Great Island, and other islands lie near it to the westward. The Sisters, near to and fronting the north end of Great Island, resemble each other, and may be seen 8 or 10 leagues; the North Sister is in lat. 39° 38′ S., lon. 147° 56′ E. Craggy Isle is small, lying N.W. of the north end of Great Island, and nearly in a direct line from its northern extremity towards Kent Groups, about mid-way between them; to the N. Westward of Craggy Isle is a high rock, in lat. 39° 36′ S., called by some navigators Wright Rock: betwixt this rock and Kent Groups, or between Craggy Isle and the Sisters, the passage is equally safe in favourable weather, but the first is more capacious than the other. The tide, which runs strong through the narrow passages among these islands, rises from 3 to 6 feet, and the time of high water is about 10½ hours after the moon passes the meridian. The flood here comes from the eastward, and at the western part of Bass Strait it comes from westward, whereby the direction and velocity of the tides are often irregular, and they are weakest in the middle of the strait. Great Island. The Sisters. Tides.

The principal Islands and Dangers in Bass Strait, with directions for passing through it, will be found in the First Volume.

AUSTRALIA, EAST AND NORTH-EAST COASTS.

DESCRIPTION OF THE COAST.

Northern coast of Bass Strait.

THE northern boundary of BASS STRAIT, from Wilson Promontory eastward, is low near the sea, fronted by a sandy beach of great extent, and stretches in a N. E. by E. direction to Cape Howe. A ridge of hills inland converges gradually towards the sea, until it joins the hills between Ram Head and Cape Howe, where the coast presents some rocky points of land.

Cape Howe.

CAPE HOWE, in lat. 37° 30′ S., lon. 150° 7′ E., is a low point of rocks and sand, with hills behind it, and forms a projecting part of the coast, which hence takes a direction to the northward.* Green Cape, of smooth sloping aspect, bears North a little easterly from Cape Howe, distant about 5 leagues; a little farther northward, in lat. 37° 4′ S., is TWOFOLD BAY, the shores of which are not high, but consist of steep heads, rocky points, and sandy beaches, and the outer north and south points of the bay have dry rocks close to them. The land at the back of this bay is more remarkable for hummocks than any of the parts contiguous, and a round mount to the S.W., about 5 leagues inland, may be seen at 15 leagues' distance, above the other hills.

Twofold Bay.

Twofold Bay was surveyed by Lieut. Woore, R. N., in 1834; it is a good place for whalers or other vessels to take shelter in during blowing weather. SNUG COVE lies at the back of the steep stony head, called Cove Head, on the north side the bay, where a vessel may be land-locked in 5 fathoms, sandy bottom; and there seems to be room for two, or perhaps three ships in it, but the water shoals suddenly towards the head of the cove. At the anchorage on the south side the bay a vessel cannot be land-locked in more than 3 fathoms, and in deeper water she would be exposed to a N. by E. wind. Wood abounds all round the bay, but fresh water is only found in swamps near the anchorage; large boats may enter the lagoon at the east end of the great south beach at half flood. The tide rises 6 or 7 feet, high water at full and change of the moon, at 9h.

Snug Cove.

Tides.

Cape Dromedary; coast adjoining.

CAPE DROMEDARY is a projecting headland, in lat. 36° 18′ S., lon. 150° 14′ E., having a double mountain over it called Mount Dromedary; and 6 miles to the eastward is Montague Island, nearly 2 miles in extent North and South, with 12 fathoms near its west side, where a ship might anchor; but the bottom is rocky, and some rocks lie near the S.W. end of the island. The coast between Cape Howe and this headland is bold to approach within a reasonable distance, with soundings fronting it

* The east coast of Australia, or New Holland, from Cape Howe to the northern extremity of this extensive country, was explored by Captain James Cook in 1770, and called by him New South Wales: the southern coast, and great part of the north-eastern coast, have been surveyed by the late Captain Matthew Flinders, and the north-western coast by Captain P. P. King, R. N., and more recently by Captains Wickham and Stokes, R. N. Great part of the southern and western coasts has also been explored by the French surveying ships at different times.

to the distance of 3 or 4 leagues. From Cape Dromedary the coast extends about North to Bateman Bay, in lat. 35° 49′ S., which is about 2 leagues wide, and contains several islands. Lieutenant R. Johnstone, R. N., in 1822, discovered at the head of the bay the entrance of a fine, clear, capacious river, with 9 feet water on the bar, deepening inside to 6 fathoms, and having from 7 to 4 fathoms for 20 miles upwards. Although small vessels often take shelter under one of the islands in this bay, Lieutenant Jeffreys thinks it would be an imprudent risk for a stranger, unless in a case of great necessity. Point Upright lies about 2½ leagues N. by E. of this bay, and thence the coast stretches north-eastward to Cape St. George, in lat. 35° 10′ S., lon. 150° 56′ E., having several isles contiguous to the shore, and a remarkable mount, called the Pigeon House, rising a little inland, in lat. 35° 21′ S. Cape St. George.

JERVIS BAY* (the entrance), in lat. 35° 5′ S., lon. 150° 59′ E., is formed betwixt Bowen Island, which touches the northern point of Cape St. George, and the peninsula called Long Nose, to the northward. It is 1½ miles wide in the entrance, with soundings of 15 and 20 fathoms; and inside a spacious bay or harbour opens, extending North and South 7 or 8 miles, and being about 5 miles wide. Excepting where reefs project from most of the points, this bay seems to have few dangers; the soundings are from 14 to 10 fathoms, decreasing to 7 or 8 fathoms near the shores on either side, with two inlets or rivers at the northern part. There is fresh water on the western side the bay, betwixt the inlet and Cabbage Tree Point to the southward, also good water on the island close to the beach. The best berth to anchor is in 7 or 8 fathoms, off a long sandy beach, where a small bay is formed at the N. E. part of the harbour, called Port Bowen. Here a ship will be land-locked, and sheltered from all winds. The north point of the entrance rises 600 feet perpendicularly from the sea; the course into the bay is about W. N.W., then round to N.W. and northward. There is room for ships of any size to work in or out, observing to give a berth to a rock that lies rather more than a mile inside the north point of the entrance, and nearly a mile distant from the eastern shore of the bay. The reef projecting from Rocky Point, which lies to the northward of the rock last mentioned, must also have a berth. This bay abounds with fish; but the natives being considered treacherous and cruel, no boat's crew ought to land unarmed, and they must be watchful to prevent any attack from them. Jervis Bay.

RED POINT, in lat. 34° 29′ S., lon. 151° 2′ E., has some isles to the southward of it, and the coast betwixt it and Jervis Bay is safe to approach; but there is a shoal in the bay to the northward of Red Point. Betwixt this point and Cape Solander the coast forms a small concavity, having a range of whitish cliffs about 3 leagues southward of the latter, extending some distance farther South. The land over these is moderately high and level, having upon it a small clump of trees. Red Point; coast adjacent.

BOTANY BAY lies about 4 leagues to the southward of Port Jackson, the entrance being formed by Cape Banks to the northward and Cape Solander to the southward; Cape Banks is in lat. 34° 0′ S., lon. 151° 14′ E. The narrowest part of the entrance is about half a mile, and stretches in a north-westerly direction, the depth of water decreasing from 16 or 18 fathoms outside, gradually to 6, 5, and 4 fathoms inside the bay. To sail in, keep about mid-channel betwixt the heads, until fairly Botany Bay.

* This bay was discovered by Lieutenant Bowen, August 19th, 1791, and afterwards explored by Mr. Matthew Weatherhead, of the ship Matilda, employed in the South Whale Fishery.

within them; then haul over a little to the northern shore, and anchor in 5, 6, or 7 fathoms.

Around the bottom and sides of this extensive bay the water is shoal, generally from 4 or 5 to 10 or 12 feet: although the anchorage fronting the entrance is of considerable extent, and here ships may lie in from 4 to 7 fathoms water, there is no shelter from easterly winds; and when these blow either from the N. E. or S. E. quarters, a heavy sea rolls into the bay, rendering the anchorage at times unsafe. Fresh water is also scarce on the shores that form the lower parts of the bay. High water at 8 hours on full and change of moon, and the rise of tide from 5 to 7 feet.

Port Jackson.

PORT JACKSON, where the first English settlement was established on this coast, January 25th, 1788, is one of the best and safest harbours in the world, and a stranger may go into it with ease, by conforming to the following directions, chiefly by Captain John Hunter,* who made an excellent survey of this spacious port, and was afterwards governor of the colony.

Captain King states, that the lighthouse at the entrance of the harbour, in lat. 33° 51′ 11″ S., lon. 151° 19′ 45″ E., is a revolving light, that may be seen 8 or 10 leagues; it is a square pyramidal tower, 65 feet high, being $4\frac{1}{2}$ miles to East of Sir Thomas Brisbane's Observatory at Sidney. The government house at Sidney is in lat. 33° 52′ S. by Sir T. Brisbane's observations; and a solar eclipse observed by him made the lon. 151° $14\frac{1}{4}$′ E. The same eclipse observed by Mr. Charles Rumker on the 16th August, 1822, at Paramatta, made the observatory there in lon. 151° $1\frac{3}{4}$′ E., or $12\frac{1}{2}$ miles to the West of Sidney.

The latitude is the best guide to this port, or to any other upon the coast, and soundings generally extend 4 or 5 leagues off.

Directions.

In the winter months there is much blowing weather on this coast, and as the gales from seaward prevail often between N. E. and S. E., it is prudent not to borrow too close to the shore, until in the latitude of the place. When in lat. 33° 50′ S., steer in for the coast, which here extends nearly North and South; the entrance of the harbour will shew itself when you come near, by the Lighthouse Tower, and by the heads on each side, which are high, steep, perpendicular cliffs, of a light reddish colour, having soundings from 15 to 12 fathoms between them. This Tower, called Macquarie Tower, constructed of white stone in 1818, stands on the south head of the entrance, on the brink of the cliff, and is very conspicuous. The light on it is shewn at dusk every evening, and continues during the night; it is a revolving red light, the revolution requiring one and a half minute of time: but from the distance of 5 to 8 miles at sea, the light never entirely disappears: its greatest brilliancy continues from 10 to 15 seconds, and it may be seen from a ship's deck at the distance of 10 leagues.

Macquarie Tower and Light.

When coming from southward, if the weather be dark or thick, preserve a good offing until the light is seen, in order to clear the projection of the coast of Botany Bay, the land of which is comparatively low; and where the current sets sometimes S.W. towards the shore. Although hard gales sometimes blow from seaward, yet strong westerly gales often prevail in winter, making it necessary to keep near the

* Afterwards Admiral Hunter. Directions for Port Jackson, and valuable remarks for the coasts of Australia, are also contained in the Appendix to Captain Philip Parker King's Surveying Voyages of those coasts, which, with his charts engraved at the Admiralty, will be valuable to ships destined to Australia or Van Diemen Land.

coast at such times; otherwise, much time may be lost getting in with the land during the prevalence of these winds.

When, therefore, the wind blows strong from westward, a ship should, after passing Cape Howe, keep within 3 or 4 leagues of the coast, unless there be cause to apprehend a change of wind.

A ship may run in without fear betwixt the Heads, which are distant from each other about one mile; for the passage is clear, the shore pretty steep to on both sides, and as the sea breaks on the rocks, even in fine weather, it will shew the reef that projects above a cable's length from the Inner South Head, or those rocks that are detached from the shore. Steer in between the Heads for a high bluff point, steep to, called Middle Head, facing the entrance, until you open a very extensive arm of the harbour to the southward. This arm or branch lies S.W. by S., and if the wind be fair for sailing up it, along either shore, haul round the South or Inner Head, which is a low rocky point, and forms the easternmost or outer point of this arm. Give it a berth of a cable's length, then steer right in for the first sandy cove, called Camp Cove, Green Point being its south extreme; keep at a convenient but short distance from the shore, in 3½ and 4 fathoms, because fronting this cove there is a patch of rocks, called the Middle Ground or Sow and Pigs, nearly in mid-channel, and visible at half tide: it is about 400 fathoms in length and 150 in breadth, extending in the direction of the harbour: the rocky patch on the outer end of the shoal, and on which the sea usually breaks, has a beacon on it, and is in a *transit line* with the Outer North and Inner South Heads, N. 53° E., and S. 53° W. A short distance N.W. of the beacon is a light vessel, which marks the north end of the shoal in the night by exhibiting two vertical lights. The water shoals gradually towards this patch all round, upon a smooth sandy bottom, for it is rocky only about half a cable's length from the dry part. You may keep near the upper point of Camp Cove in 6 and 7 fathoms, and thence steer directly up the harbour.

If you intend to proceed along the western shore, and to leave the patch of rocks or Middle Ground to the eastward, steer in, as before, for Middle Head, keeping it on the larboard bow, and the sea horizon well open, until it is within a cable's length, or until within a transit line of a small sandy beach on the western shore and Green Point; then steer for George Head, the next point above Middle Head on the same side, which give a berth of a cable's length, and also to Point Bradley, about 1½ miles to the southward, from whence steer up the harbour to the westward. This is the best channel in passing the Middle Ground, being a little wider than the eastern channel, and the depths in it are 4, 4½, and 5 fathoms. Having passed George Head, or second point on the western side, the channel is safe nearly to each shore, and you may run in or anchor at discretion.

If a stranger come in between the Heads with a southerly wind, it would be imprudent to venture to work up past the Middle Ground; he may anchor near the Middle Head, or on the north side of that Head, in Hunter Bay. Pilots come off to ships when the proper signal is made for them.

The following remarks for sailing in by the Eastern Channel, or to the eastward of the Sow and Pigs, are given in the Australian Directory, published in 1830, at the Hydrographical Office, Admiralty. After rounding the reef off the Inner South Head, haul in towards Green Point, till the trend of the Head is in one with the summit of the Inner North Head, or about N. N. E.; then steer S. S.W. till past Green Point, and afterwards a direct course up the harbour. Green Point is a grassy mound, half a mile S. S.W. from the Inner South Head, and forms the S.W. point of Camp Cove.

Sidney Cove. SIDNEY COVE AND TOWN, the chief settlement and station of government, is about 5 miles within the Heads, on the south side the Great Southern Arm of this extensive harbour; which abounds with inlets and coves, where ships may moor and careen. From the Middle Ground up to Sidney Cove there is no hidden danger, except some straggling rocks near the south point of Watson Bay, and around Shark Island: the depths are mostly from 7 to 10 fathoms in mid-channel, and near the shore, in some places, 4, 5, and 6 fathoms. Tides. The tide rises between 6 and 7 feet on the springs, high water at $8\frac{1}{4}$ hours on full and change of moon, and a quarter of an hour sooner at the Outer Heads. Variation of the compass $8\frac{1}{2}$° E. in 1788, 8° 42′ E. in 1822, and 9° 6′ E. at Garden Island, and 9° 42′ E. at Camp Cove, in the same year.

If a ship running for Port Jackson be uncertain of her latitude, and fall in with the land on either side of it in blowing weather, she may take shelter in Botany Bay, or in Broken Bay, as circumstances require; for the former being about 4 leagues southward, and the other about 5 leagues northward of Port Jackson, are of the utmost consequence for ships which may happen to be in bad condition, and unable to keep off shore.

Winds and weather. On this part of the coast, and round Van Diemen Land, there is much stormy weather in the winter months, from April or May to October; but in the summer months the weather is generally fine, though thunder, lightning, and strong squalls are at times experienced. If at any time lightning is seen in the lee part of the horizon, a pretty severe squall may be expected from that quarter. The winds in the vicinity of Port Jackson blow more from the sea than from the land, in both seasons. The barometer generally rises with S. E. and easterly winds, which bring rainy weather from the sea; and it falls with westerly winds off the land, although they are accompanied with settled weather.

Broken Bay. BROKEN BAY (the entrance), in lat. 33° 33′ S., lon. 151° 18′ E., and about 5 leagues from Port Jackson, may be known by the land projecting from the North Head to a considerable distance eastward; the distance between the North and South Heads is $1\frac{1}{2}$ miles, and a narrow bar of 5 fathoms extends from one to the other, with depths of 12, 10, and 8 fathoms, on either side of it, decreasing to 7, 6, and 5 fathoms, as you sail up the bay, which is large and clear of danger.

The northern branch, inside the North Head, runs in a northerly direction, and is shoal and navigable only by boats or small vessels; for the channel into it is rendered narrow by a long spit of sand, extending from a low sandy point on the west side the entrance, on which the sea breaks high when the wind is at eastward.

The southern branch, called Pitt Water, a little inside the South Head, forms a good harbour, although the entrance is contracted by a shoal bank, which extends from the eastern point full two-thirds across. The west point of this branch is high, steep, and rocky, and pretty bold to approach; keep it and the western shore a-board, and steer right up the branch, where the depth in the narrows is only three fathoms at low water, for a short space; but in running up you soon deepen to 4, 5, 6, and 8 fathoms. The depths decrease gradually to the shoal that narrows the entrance, but when you are above the second point on the western shore, there is plenty of room and good depths of water; you may then run up in mid-channel without fear, both shores being pretty bold to, except from some of the points, whence shoal water extends to a small distance.

There are several coves in this branch, where a ship might lighten and careen, there being abundance of wood and fresh water in various parts of the harbour; fish may be caught in all the sandy bays.

The south-western or western branch is the best harbour for large ships, and it is separated from the southern branch by several rocky points, with steep, high land over them, between which there are some small sandy bays. Fronting the mouth of this branch there is a high rocky island of small extent, called Mount Elliot, which at the east end is of great perpendicular height, and answers as a good mark for any part of the bay. It is advisable for a stranger coming in here, to be sheltered from a gale of wind, to steer for the island, which may be passed on either side; but in steering for the south-west branch, the direct passage is to the southward of the island. Keep mid-channel between it and the south shore, which is bold to approach within 2 cables' lengths. In proceeding upwards, a branch stretching to the N. W. will be seen, and when thus high, you are above a bank or Middle Ground of 16 feet at low water, with a gradual decrease of depth towards it. This bank may be passed on either side by keeping near the shore; on the north side of it there are 5 fathoms, but the channel along the southern shore has most room and deeper water, and here a ship may anchor sheltered and land-locked. If you go higher up the south-west branch, when above the middle ground, keep in mid-channel, and the least water will be 5 or 6 fathoms. Some inlets extend from this branch with sufficient depths of water in them for ships.

If you intend to enter the north-west branch, when above the Middle Ground, steer for the larboard shore of the entrance, and keep near it for some distance up, because a shoal stretches one-third the distance over from the starboard shore. When clear of this shoal, the channel turns from the larboard into the bay on the starboard shore; and then it takes a northerly and afterwards a westerly direction, betwixt that shore and some islands on the opposite side. The north-west branch has several inlets stretching a great way into the country, and Hawkesbury River falls into it from the westward; this river is navigable by boats and small vessels a great way up, the depths being from 2 to 6 or 7 fathoms about 40 miles above the sea. The ebb tide runs pretty strong in the river, and the flood rises about 6 to 8 feet; but running through a valley, betwixt a chain of mountains on each side the level land that forms the upper part of its banks, it is thereby liable to destructive inundations, occasioned by heavy rains falling upon the mountains, and rushing down the valley in torrents, sometimes swelling the river from 20 to 30 feet perpendicular height above its common level, and destroying every thing that is opposed to their course.*

Hawkesbury River.

PORT HUNTER, called also COAL RIVER, or KING TOWN, is about 20 leagues N. by E. ¼ E. from Port Jackson, and the Nobby, or Coal Island, which shelters the entrance, is in lat. 32° 56′ S., lon. 151° 43′ E. From this island reefs project above a quarter of a mile to the North, East, and South, leaving only a narrow channel of 3 fathoms water on its western side. The mark for this channel is said to be two small lights kept in a line about S. S. W., one of which is placed on the extremity of a wharf that projects from the town, and the other on the shore. The channel appears not to be a cable's length wide, having to the westward a great extent of foul ground, reaching to the main land, where many vessels have been wrecked. The best anchorage is in 3 fathoms, about a cable's length North of the wharf; but the access to this intricate harbour is dangerous in S. E. gales. High water at 10¾ hours on full and change of moon, rise of tide about 6 feet.

Port Hunter.

Tides.

* Much of the land, corn, cattle, sheep, &c., belonging to the colonists on the banks of Hawkesbury River was destroyed by one of these torrents not long ago, and many of the inhabitants swept away.

Port Stephens.

PORT STEPHENS (the entrance) is in lat. 32° 43′ S., and N. E. by E. 8 leagues from Port Hunter. Between these places there is a projecting angle of the coast, about 17 miles from Port Hunter, the interjacent land forming a bay with a low sandy shore, on which the surf always runs high, and a ship may be lost in the rollers $1\frac{1}{2}$ miles from the beach, which must be guarded against by vessels proceeding either to Port Hunter or Port Stephens.

The entrance of Port Stephens opens between two high headlands, called Yacabah and Tomaree, which lie nearly N. E. and S. W. about half a mile from each other. When viewed from 6 or 7 leagues south-eastward, the hills appear like a group of conical islands; Yacabah Head, being high, is easily known, by the low land and water behind it, and by two small islands half a mile E. S. E. and N. E. from its extremity. Cape Stephens lies about 2 miles to the southward of the port, in lat. 32° 47′ S., and although joined to the main by a narrow neck of land, appears from the offing like an island; it may be approached within a quarter of a mile. The port opens in length inside, about 8 or 9 miles, and is 2 miles broad in some places, separated into two harbours of nearly equal size, by a long tongue of land, called Soldier Point. The Inner, or Western Harbour, contains many small islands and large shoals, only a small space at its N. E. shore being fit for ships. The Outer Harbour has likewise many large shoals, but there is room for a great many large ships, although the approach is rendered difficult by a bank extending from Tomaree Head, nearly two-thirds across the entrance.

According to the directions given by Mr. Jones, of H.M.S. Rainbow, who surveyed the harbour in 1828, ships bound in with a leading wind should steer for the south side of the North or Yacabah Head, and when it is approached within a cable's length, haul in about W. N. W., until the north point of Tomaree or South Head bears S. S. E. $\frac{1}{2}$ E.; then steer direct for Nelson Head, which is steep to, and may be passed within half a cable's length. From hence keep close along the south shore, the channel between Myall Bank and Nelson Bay being scarcely more than a quarter of a mile wide; but, with a leading wind, it is safe for large ships, the edge of the bank being visible at low water, and steep to; the shore is also steep to. From Nelson Head W. S. W. $1\frac{1}{3}$ miles, and N. by E. from a red spot in the cliff, is a small patch of only 12 feet, with 5 fathoms on its south side, and 7 or 8 to the northward of it: the south land of Yacabah, just open of Nelson Head, leads to the northward of this shoal patch, in the best channel. When the red spot in the cliff bears S. by E., you have passed the patch, and must haul in for the south shore, to avoid the S. E., point of the west sand-bank, which is not visible even at low water, unless the wind blow strong from the southward; then the shoalest part has breakers. For large ships, this is the most dangerous part of the channel; the course through it is about W. by S. close along the south shore, keeping the lead going, until Salamander Bay opens, or until Soldier Point bears W. by N. $\frac{1}{2}$ N., then, being clear of all danger, anchor at discretion in from 8 to 12 fathoms, mud, and in smooth water.

The entrance to the Western Harbour branches into two channels, the northernmost of which seems preferable, except with a south-westerly wind. In both these channels the spring tides run 6 knots, and a ship must be ready to bring up quickly, as the anchorage immediately becomes contracted to a small space, compared to the large expanse of water. At the S.E. side of Farm Cove, or on the west side of the north arm, a ship of 1,000 tons may anchor close to the shore. In other parts of the harbour, the tides run from 3 to 4 knots, and admit a ship to be dropped up with light winds; but it would not be safe for a large ship to pass Nelson Head without a leading wind. The

anchorage below that Head is with the extreme point S. S. W. ½ W., distant a quarter of a mile, in 7 or 8 fathoms; but a heavy swell rolls in here with southerly winds. Fresh water may be procured in several places. Variation 10° E. in 1828. High water at 9¼ hours on full and change of moon, rise of tide 8 feet. Tides.

CAPE MORETON, the north point of Moreton Island, is in lat. 27° 1′ S., lon. 153° 25′ E., and the entrance of the bay of this name is about 7 or 8 leagues to the southward, formed between the inner land of Cape Moreton and Point Skirmish, and is about 8 miles wide: but although this bay extends a great way inland to the southward, it is studded with sand-banks, having intricate channels between them, with depths of 5 to 13 fathoms, sandy bottom; but towards the head of the bay, both on the shoals and deeper parts, the bottom is mud. About 4 miles off Cape Moreton, to the N. N. E., is a patch of dry rocks. Brisbane River, a fine fresh water stream, falls into the bay in lat. 27° 25′ S., abreast the strait, between Moreton Island and Point Lookout. The penal settlement here is a little North of the mouth of that river. Cape Moreton. Moreton Bay.

The coast from Port Stephens runs in a general direction N. by E. towards Cape Moreton, having Port Macquarie and Shoal Bay in the interval; the former in lat. 31° 23′ S., and the latter in 29° 26′ S. Between Shoal Bay and Cape Moreton lies Cape Byron, the easternmost point of Australia, in lat. 28° 38′ S., to the north-westward of which, about 20 miles inland, is Mount Warning, which is said to be visible 22 leagues.

WIDE BAY (the entrance), in lat. 25° 49′ S., has 3 fathoms water, and is said to form a good harbour inside: this bay has a communication with Hervey Bay, by which the Great Sandy Peninsula is insulated. Wide Bay.

SANDY CAPE, in lat. 24° 42′ S., lon. 153° 17′ E., is the northern extreme of a long sandy Island, which stretches North from Wide Bay. Sandy Cape.

A reef extends 18 or 19 miles to the northward from Sandy Cape, called Breaksea Spit, the extreme point of which is in lat. 24° 24′ S., lon. 153° 11′ E. Between the spit and a low islet, called Lady Elliot Island, 30 miles N. 53° W. from it, there appears to be a clear passage. Inside the northern half of Sandy Island, and formed by it to the eastward, and by the main to the southward and westward, is a large bay, called Hervey Bay, having moderate depths of from 5 to 14 fathoms in it, and appearing free from shoals. The Bay is about 11 leagues in extent each way, open to the northward, and having at its head, or southern part, a shallow and intricate channel, separating the southern half of Sandy Island from the main, and communicating near the south end of that island with Wide Bay.

The coast from Hervey Bay extends in a north-westerly direction to Cape York, the N. E. point of Australia.

The whole North-East Coast of Australia, being fronted by numerous islands and reefs, and bounded by the great barrier chain of reefs which extends from the coast between 2 and 3 degrees in some places, ought to be avoided by ships bound to the northward. North-east Coast.

This coast, with its inner passages and dangers, has been surveyed by Captain P. P. King, R. N., and his excellent charts and sailing directions have long been before the public; the limits to seaward of the Great Barrier Reefs, however, are still comparatively unknown, and it will therefore only be practicable to point out the general direction and extent of the reefs according to our present information.*

* An expedition has just been sent out by the Admiralty, consisting of H. M. S. Fly and H. M. Cutter

Barrier Reefs.

The BARRIER REEFS commence to the northward of Breaksea Spit, about the parallel of 24°, and between that and the parallel of 19°, extend from 100 to 130 miles from the coast; from the parallel of 19° to Cape Melville, in lat. 14° 10′ S., they seem to be restricted to narrower limits, not extending more than 45 or 50 miles off. The land at Cape Melville recedes to the westward, forming Princess Charlotte Bay, from whence to the entrance of Torres Strait the line of reefs gradually increases its distance from the coast, until abreast of Cape York, the N. E. extreme of Australia, the edge of the barrier is 70 miles from the land. The general direction of the coast from Breaksea Spit, off Sandy Cape, to Cape Melville, is N.W., and from thence to Cape York N.W. $\frac{3}{4}$ N.; the entire line of coast being fronted by numerous islands and reefs, among which are many navigable, though intricate, channels.

Beyond the Barrier Reefs, in the open sea, lie many islands and dangers, which will be described in the section which treats of the passage from Port Jackson to the northward.

WINDS AND CURRENTS.

Winds and currents on the East coast of Australia.

THE WINDS AND CURRENTS on the east coast of Australia are thus described by Captain Flinders:—

From Cape Howe, northward, S. E. winds prevail in summer, or from the beginning of October to the end of April, with land and sea breezes near the shore, and fine weather. But far south of the tropic, South or S. W. gales occasionally happen, and strong breezes between North and N.E. bring heavy rain, with thunder and lightning, usually of short duration. A sultry land wind from N. W. in summer is commonly followed by a sudden gust between S. E. and S. S. W., against which a ship should be guarded, if near the coast. At such times, the thermometer at Port Jackson has been known to fall from 100° to 64° in less than half an hour.

In winter, from May to September, westerly winds prevail, generally attended by fine weather; the gales in this season blow from seaward, between N. E. and South, and bring rain: nor is there any settled weather in winter with the sea winds; and even when between N. and N. W. there is often rain, though the wind be usually light in those quarters.

While the prevailing winds are from S. E. in summer and S.W. in winter beyond the tropic, the current almost constantly sets to the southward, from 1 to $1\frac{1}{2}$ miles per hour, its greatest strength being opposite the points of land which project farthest out, and its limits may be considered at from 4 to 20 leagues off the coast. Farther out, there seems to be no regular current, and close in shore, especially in the bights, there is commonly an eddy current setting northward from a quarter of a mile to one mile per hour. At the southern parts of the coast its strength is greatest, and towards Cape Howe it takes a direction to the eastward of South: whereas, in other places, it usually follows the line of the coast.

This account of the winds and currents beyond the tropic shews the advantage of keeping within 3 or 4 leagues of the land, when sailing northward, and intending to touch on the coast; but in winter this must be done with caution, because then, easterly gales often happen. And on this east coast it may be taken as a general rule, that a rise

Bramble, under the command of Capt. F. Blackwood and Lieut. Yule, for the purpose of making an accurate survey of the Barrier Reefs and the dangers in Torres Strait. H. M. S. Beagle being shortly expected to return home, the information derived from the surveys of Captains Wickham and Stokes on the N.W. coast and in Bass Strait may shortly be expected to be given to the public.

of the barometer indicates either an increase of the present wind, or that it will veer more to seaward; and a fall denotes less wind, or a breeze more off the land. The barometer rises highest with a S. E. wind, and falls lowest with a N.W. wind; N. E. and S.W. are points of mean height. Indications of the barometer.

To benefit by the current in sailing southward, a ship should not come nearer to the coast than 5 or 6 leagues, unless to the projecting points; and if the distance is increased to 10 or 12 leagues, so as to have the land only visible, an advantage would be gained, and no danger then be apprehended from the gales.

While westerly winds prevail on the southern parts of the east coast, the South-east Trade blows with most regularity within, and close to the tropic, producing sea and land breezes near the shore, with serene weather; and the farther you go northward, the longer does this fine weather continue, till near Cape York, and at the entrance of Torres Strait it commences in March or early in April, and continues to the middle or end of November.

On the north coast of Australia, the South-easterly Monsoon prevails from March or April to November, often veering to East, or even to N. E., producing fine weather, with land and sea breezes near the shore. The North-west Monsoon sets in about the beginning or middle of November, and continues till near the end of March. This is the season of heavy rains, thunder and lightning, and is thought to be the most unhealthy period. Winds on the north coast.

Although the current sets mostly to southward along that part of the Australian coast beyond the tropic, yet to the northward of Sandy Cape, outside the Barrier Reefs, it sets with the trade wind to N. Westward, generally from half a mile to one mile per hour, as far as the entrance of Torres Strait. Inside the Barrier Reefs there is little current, but usually a kind of tide prevails between them and the coast; although in Torres Strait there is apparently a N. W. or westerly current during the period of strong S. E. winds.

When the Westerly Monsoon prevails in the Timor Sea, and between New Holland and New Guinea, particularly in November, December, January, and February, no ship ought to attempt the passage through Torres Strait, either to the westward or eastward; as in these months dark, rainy, and squally weather would greatly augment the danger of this intricate navigation, which has seldom been attempted from the westward at *any time*,* nor from the eastward at an unfavourable season.

ISLANDS AND DANGERS OFF THE EAST AND NORTH-EAST COASTS OF AUSTRALIA.

PREVIOUS to giving directions for any of the northern passages from Port Jackson, it may be useful to notice the islands and dangers which lie near the route.

LORD HOWE ISLAND, in lat. 31° 26′ S., lon. 159° 0′ E., is of considerable size, Lord Howe Island, and other islands.

* The ship Zenobia, in January and February, 1823, effected a passage through from the westward, with great difficulty, as will be seen under the description of *Endeavour Strait.*

and Ball Pyramid, 3½ or 4 leagues South of it, is a high rock, having others contiguous to it. Middleton Island, in lat. 28° 13′ S., lon. 160° 31′ E., is small, and a shoal of the same name is placed in lat. 29° 14′ S., lon. 158° 53′ E., by Captain Flinders. An extensive reef, about 3 leagues in length, was seen in July, 1815, by the Indefatigable, supposed to be Middleton Reef; but their time-keeper being incorrect, its longitude was not ascertained. There is also a patch of shoal water, seen by the Lady Nelson, in lat. 30° 20′ S., lon. 161° 5′ E.

Elizabeth Reef.

ELIZABETH REEF,* in lat. 30° 5′ S., lon. 159° 0′ E. by chronometers, was discovered by the ships Claudine and Marquis of Hastings, in company, at 2½ P.M., May 16th, 1820, returning from Port Jackson towards Torres Strait. At 5 P.M., when within 2 cables' lengths of the reef, had 14 fathoms, hard rocky ground, at a quarter of a mile distant from it 25 fathoms, then no ground. It appeared to be of quadrangular form, about 3 miles in circuit, with deep water in the centre, the edges of which, with the exception of a few rocks like negro heads, are covered, and the sea runs high over them. The east side of the reef extends about N. N. E. and S. S.W. one mile, but the greatest extent appeared to be from W. N.W. to E. S. E.

Dangers near the east coast of Australia.

From Port Jackson to Sandy Cape the coast of New South Wales has few dangers, excepting some near the shore. Those most in the way of ships passing along the coast to the northward are the Solitary Isles, about 3 leagues off shore, from lat. 29° 56′ to 30° 9′ S., lon. 153° 21′ E., having a reef, in lat. 30° 11′ S., to the south-westward of the southernmost island. Some shoals in lat. 28° 7′ S., lon. 153° 39′ E., distant 2½ leagues East of Point Danger, having Mount Warning, a high hill inland, to the south-westward, in lat. 28° 24′ S.; and a shoal in lat. 26° 58′ S., lon. 153° 28′ E., which lies about 2 leagues N. E. from Cape Moreton, and about 11 leagues to the East of the hills called the Glass Houses.

There is a 9 fathoms bank, called Gardner Bank, said to lie off the centre of Sandy Island, in about lat. 25° 25′ S., lon. 154° 0′ E.

To the northward of Middleton Island, in lat. 26° 5′ S., lon. 160° 0′ E., is Favorite Reef, and 60 miles N.W. by N. from it, a small patch of soundings, called Capel Bank, on which is marked 32 fathoms. Besides these, there is a rock in lat. 24° 0′ S., and lon. 160° 15′ E., and towards New Caledonia are the following islands and reef, which, however, are considered doubtful:—An island, in lat. 26° 12′ S., lon. 163° 12′ E.; another island, in lat. 23° 40′ S., lon. 162° 57′ E.; and a reef, in lat. 23° 40′ S., lon. 164° 10′ E.

Cato Bank.

CATO BANK, in lat. 23° 6′ S., lon. 155° 23′ E., is a dry sand surrounded by breakers, discovered by Captain Flinders, August 15th, 1803.

Australia Reef.

AUSTRALIA REEF, discovered by Captain Slight, September 20th, 1824, is in lat. 22° 45′ S., lon. 156° 6′ E., and cannot be discerned above 1½ or 2 miles, the sea being very smooth around at times.

Wreck Reef.

WRECK REEF AND SAND-BANK, where the Cato and Porpoise were lost, at night, August 15th, 1803, in lat. 22° 11′ S., lon. 155° 19′ E., is the central part of a chain of six coral reefs, extending nearly East and West from lon. 155° 7′ to 155° 28′ E.; the easternmost is covered with wiry grass and some shrubs, and called Bird Islet. The rise of tide here was 6 or 8 feet, high water at 8¾ hours; variation 9° 17′ E.

* The Elizabeth, of London, was wrecked on a reef in 1831, in lat. 29° 30′ S., lon. 158° 30′ E. by the observations made in the Fairy cutter, sent from Sydney to examine the wreck.

CARNS, or MID-DAY REEF, is described as follows, by Captain R. Carns, who discovered it in the ship Neptune, from Port Jackson, bound to Calcutta. Mid-day Reef.

June 20th, 1818, took a departure from Sandy Cape, and steered to keep mid-way between the Great Barrier and Wreck Reefs. On the following day, at noon, saw breakers ahead, stretching to the eastward as far as could be seen from the mast-head, and about 5 miles to the westward; wore immediately, and bore away for the western extremity, which we passed within 2 miles. This part, measured by good chronometers, bears from Sandy Cape N. by E., distant 176 miles, or in lat. 21° 58′ S., lon. 154° 20′ E. I called it Mid-day Reef, thinking it to be a new discovery; as the western end of Wreck Reef is placed in lon. 155° 7′ E., they cannot be one and the same.*

When passing the western extremity of the reef, it appeared to extend East as far as could be discerned from the mast-head, and consisted of sand-banks and rocks, some just visible above water, others elevated from 5 to 20 feet. There seemed to be several passages between the sand-banks, but we thought it would be too great a risk to attempt any of them, as the wind blew strong.

I can depend upon the accuracy of our observations in fixing the position of this reef, and think it renders the navigation critical between the Barrier and Wreck Reefs.

SIR JAMES SAUMAREZ SHOALS, extending N. N.W. and S. S. E. from lat. 21° 35½′ to 21° 44′ S., lon. 153° 46′ E. by chronometer, were seen February 27th, 1823, in the Zenobia, by Captain Lihou, the northernmost extreme being a dry sand-bank; and there is reason to suppose that other reefs exist to the N.W. of this position. Sir James Saumarez Shoals.

FREDERICK REEF, discovered in 1812, by the ship of this name, and upon which the Queen Charlotte was wrecked, extends from lat. 20° 45′ to 21° 0′ S., and from lon. 154° 15′ to 154° 37′ E. This ship also saw a reef in lat. 20° 44′ to 21° 2′ S., lon. 150° 32′ E. Frederick Reef.

HORSE SHOE SHOAL, seen by Lieutenant Vine, its northernmost end, is in lat. 20° 5′ S., lon. 151° 50′ E., and having the convex or outer edge to the southward, extending as far as 15 miles to the South and East. Horse Shoe Shoal.

KENN REEF, discovered April 3rd, 1824, by Captain Kenn, of the ship William Shand, on the passage from Port Jackson towards Torres Strait, consists of rocks and sand-banks partly above water, extending S. E. and N.W. about 9 miles, and apparently 6 or 7 miles in breadth. There appeared to be no soundings close to the reef, where they passed within 1½ miles of its eastern edge, and made the centre of that part in lat. 21° 9′ S., lon. 155° 49′ E. by chronometer, measured from Port Jackson, in a short run of five days. This dangerous reef is directly in the route of ships passing some distance to the eastward of the track laid down by the late Captain Flinders in his general chart. Kenn Reef.

BOOBY SHOAL is placed by Captain Flinders in lat. 21° 2′ S., lon. 159° 2′ E., and the BELLONA SHOALS in lat. 20° 55′ S., lon. 159° 47′ E. Between these shoals Booby, Bellona, and other shoals.

* This reef is placed in lat. 21° 53′ S., lon. 154° 18′ E., in the Admiralty chart.

and to the north-westward and south-eastward of them are other dangers, the precise extent of which is not yet determined; they at present appear on our charts between lat. 20° 35′ and 21° 50′ S., and lon. 158° 45′ and 160° 0′ E., and are described as follows.

Baring Shoals. BARING SHOALS are a cluster of detached reefs and banks, apparently betwixt lat. 20° 40′ and 21° 50′ S., lon. 158° 15′ and 159° 30′ E., by which Captain Lamb, in the Baring, was embarrassed three days in August, 1819, bound from Port Jackson to Bengal. One of these is a sandy island, in lat. 21° 24½′ S., lon. 158° 30′ E. by mean of four chronometers, and a reef extended from it E. S. Eastward as far as the eye could discern. These reefs seem connected by a bank of soundings, as the Baring continued to have soundings from 10 to 48 fathoms during the three days she was among them; but breakers were frequently seen, also an immense number of whales, apparently of the sperm kind. This bank was supposed to be united with Booby and Bampton Shoals, and Captain Lamb is of opinion that many undiscovered dangers exist in this part of the ocean.

Captain Welsh, of the Claudine, in 1820, saw a reef, which he named CLAUDINE REEF, bearing West 6 miles from the south end of Booby Island, having a clear passage between them, and he made the reef in lat. 21° 19′ S., lon. 159° 4′ E. by chronometers.

Minerva Shoal. MINERVA SHOAL was discovered by Captain Bell, in the ship of this name, in his passage from Port Jackson towards India, of which he has given the following description; and it seems to be a continuation of the Baring Shoals to the eastward, for the Minerva soundings were on the eastern part of the bank seen by the Baring.

July 8th, 1818, at midnight, sounded in 33 fathoms, coral; hauled up to the eastward, had from 33 to 30 fathoms, sand and coral, in a run of 5 miles; then tacked to S.W. and steered 8 miles in this direction, the depth gradually increasing to 36 fathoms. At daylight steered N. by E. with the lead kept going, and had from 30 to 35 fathoms, coral and sandy bottom: at 11¼ A.M. had no ground at 40 fathoms, but immediately afterwards found ourselves on a bed of coral, with soundings of 10 to 15 fathoms; and the rocks quite visible. Hauled on a wind to S.W., shoaled to 9 and 8 fathoms; and the water appearing shoaler in that direction, wore at 11½ A.M., steered to the eastward, and deepened quickly to 30 and 40 fathoms.

When we first got soundings were in lat. 21° 22′ S., lon. 159° 10′ E. by four good chronometers, in a run of eight days from Port Jackson: at noon, lat. 20° 50′ S., lon. 159° 22¾′ E. When upon the shoalest part our situation was directly between the shoals of Booby and Bellona, as marked in Captain Flinders' chart.

Avon Islands. AVON ISLANDS, examined by Captain Sumner, of the Avon, in his passage from Port Jackson towards Torres Strait, September 17th, 1823, are small and low, covered with trees, bearing about E. by S. and W. by N., distant 2 miles from each other, having reefs projecting from both of them to the E. S. E., but otherwise apparently safe to approach. The boat found soundings between them of 9 to 20 fathoms, coral bottom, and there seemed to be a clear channel between them and a range of breakers seen to the S. E., thought to be Bampton Shoal. These islands are in lat. 19° 30′ S.,* lon. 158° 12′ E. by chronometers, and 158° 10½′ E. by lunar observations.

Bampton Shoal. BAMPTON SHOAL, discovered in 1793 by Captain Bampton, of the Shaw

* Another account places them in 19° 40′ S.

Hormazier, on his passage from Port Jackson towards Torres Strait and Bombay, extends from lat. 18° 49′ to 19° 30′ S., lon. 158° 2′ to 158° 45′ E. It has the form of a horseshoe, being a narrow coral shoal, of great capacity inside, with a wide entrance from southward, and having two isles with trees on its eastern side; but there is no outlet except at the south part, nor are there any soundings at the mouth of, or in the great basin formed by the shoal, into which the above-named ship got in the night, and had great difficulty in beating out of it against the trade wind.

Captain David, of the American barque Nelson, gives the position of a sand-bank in lat. 19° 21° S., lon. 151° 2′ E., extending N.W. and S. E. 4 or 5 leagues, and fronted on the east side by a reef of rocks about 13 feet above the sea at low water.

Alert Reef and other dangers.

ALERT REEF, discovered by Captain Brodie, in his passage from Port Jackson to Calcutta, in the Alert, belonging to the latter place, is described by him as follows :—

October 4th, 1817, at 9½ A.M., saw breakers about 7 miles distant, extending in a N. E. and S.W. direction. At 10, saw two small sand islets bearing from N. N.W. to N.W.; hauled up N. E. to avoid the danger. At noon, the islets bore W. ½ S., distant about 12 miles, which made them, by noon observation, in lat. 17° 2′ S., lon. 151° 49′ E.: the reefs were visible from the topsail-yard as far as the horizon to S. Westward; and we afterwards ran 18 miles to the northward and eastward before we cleared them.

Vine Bank.

VINE BANK, in lat. 17° 46′ S., lon. 151° 40′ E., was seen by Lieut. Vine.

Lihou Islets and Shoals.

LIHOU ISLETS AND SHOALS, seen by Captain John Lihou, R. N., who passed along their western side, February 15th, 1823, in the ship Zenobia, bound from Manila to the West Coast of America, were found to consist of a chain of sand islets and reefs, extending in a N. E. and S.W. direction from lat. 17° 4′ S., lon. 151° 59′ E., to lat. 17° 41′ S., lon. 151° 30′ E. The northern part of these dangers *appears* to be the same as that called Alert Reef; and the south part, that called Vine Bank, already mentioned.

Governor Farquhar Shoals.

The GOVERNOR FARQUHAR GROUP, apparently the same as those last described, is an extensive range of shoals and islets, seen in 1821 by M. Tregrosse, of the French brig Les Trois Frères, with the brig Jessie in company. Two sandy islets terminated the eastern part of the reefs, the easternmost of which is in lon. 151° 47′ E. of Greenwich; finding the vessels could not pass to windward, they bore away, and ran along the shoal at 1½ leagues distance, from 8 A.M. to 4 P.M., counting altogether seven islets, three of which were covered with shrubs, and the whole connected by a reef, the sea breaking high on its edge. The westernmost islet is in lat. 17° 39′ S., lon. 151° 27′ E., and appeared to terminate the group.

Tregrosse Islets.

TREGROSSE ISLETS (the westernmost), is in lat. 17° 42′ S., lon. 150° 43′ E., and the westernmost reef in lat. 17° 44′ S., lon. 150° 32′ E.; betwixt this and another extensive reef, and the westernmost islet, M. Tregrosse steered through a passage 5 or 6 miles wide, which appeared safe. Another isle was seen to the northward, which seemed to be connected with the western one by shoal water.

Diana Bank, and other dangers.

DIANA BANK, in lat. 15° 41′ S., about lon. 150° 30′ E., was discovered by Monsieur Bougainville, in 1768, and BOUGAINVILLE REEFS are placed by Captain Flinders from lat. 15° 12′ S. to 15° 35′ S., lon. 148° 0′ E.

ROUTES FROM PORT JACKSON, OR VAN DIEMEN LAND, TOWARDS INDIA OR CHINA, BY TORRES STRAIT.

Passage from Van Diemen Land, or Port Jackson, by Torres Strait.

WHEN the SOUTH-EAST Monsoon prevails in the Banda Sea, from March to September, ships drawing little water would find the route through Torres Strait more speedy than any other, in proceeding from Van Diemen Land or Port Jackson, towards Java, Hindoostan, or other parts to the westward. But this route through Torres Strait ought not to be pursued in a large ship, or in one that draws much water, without great caution, for it is rendered intricate and dangerous by the labyrinth of shoals and isles that form it; the whole of the space betwixt the south part of New Guinea and the N. E. part of Australia being strewed over with isles and shoals innumerable. H. M. S. Pandora, in 1791, fell in with the shoals to the eastward of this strait, in lat. 9° 53′ S., lon. 144° 14′ E., a little to the eastward of Murray Island; a steep coral reef was found to front the sea, affording no passage through it; she therefore worked to the southward along the edge of the reef as far as lat. 11° 25′ S., without being able to discover any safe opening through it to the westward, and here unfortunately struck on a detached part of the reef, August 28th, and soon went down in deep water. Great part of the crew were saved in the boats, passing to the westward through a narrow gap in the reef, near the wreck of the frigate, and from thence proceeding through Torres Strait to the Island Timor.

ROUTE OF THE SHAW HORMAZIER.

Route of the Shaw Hormazier.

The Shaw Hormazier, bound from Port Jackson to Bombay, in 1793, entered Torres Strait by the New Guinea side, anchored in 11 fathoms, good ground, in a bay at the north part of Wamvax or Darnley Island, within a quarter of a mile of the shore, which anchorage is in lat. 9° 28′ S., lon. 143° 40′ E.; here one of her boats was cut off by the natives, and some of the crew massacred. This ship was three weeks getting through Torres Strait, keeping nearest the New Guinea side; she was several times in danger, grounded on some of the shoals, and found much difficulty in pursuing her passage through this intricate navigation, which should never be attempted on the New Guinea side of the strait.

ROUTE RECOMMENDED BY CAPTAIN FLINDERS.

Directions from Port Jackson towards Torres Strait.

TO SAIL THROUGH TORRES STRAIT,* the late Captain Flinders recommends June and July as the best time, certainly not earlier than March, nor later than the middle of September: no ship should attempt this route without a chronometer.

If, at leaving Port Jackson, you do not intend to keep along the coast to Sandy

* These directions are for the Northern Route through Torres Strait, which is now seldom adopted, being circuitous and dangerous.

Cape, and to pass to the westward of CATO BANK and WRECK REEF, steer N. E. by E. at leaving that port till in about lon. 155½° E., and the coast will be 50 leagues distant; steer then North till in lat. 24° S., and in case of an error in the chronometer, do not pass lat. 23° 20′ S. in the night, on account of Cato Bank. It is best not to heave to, but to make short tacks till daylight, making allowance for a probable N.W. current of one mile per hour. A good look-out is indispensable, and an officer should be at the mast-head in the day, and at the fore-yard in the night, to listen as well as to look; for in dark nights breakers may often be heard before they can be seen.

From lat. 23° to lat. 15° S., great caution is necessary, whether a ship pass to the eastward or westward of Wreck Reef, on account of the numerous shoals, particularly between the parallels of 23° and 20° S., where these dangers are scattered in an east and west direction to a great extent.

In the day you may pass about 9 or 10 leagues to the eastward of Cato Bank and Wreck Reef; but with favourable weather it may be desirable to get a sight of Bird Islet, at the eastern extremity of the latter, in lat. 22° 11½′ S., lon. 155° 27′ E., in order to ascertain the accuracy of your chronometer, as its longitude is well determined. Bird Islet.

Having passed Wreck Reef, the Cumberland's track, marked on Captain Flinders' chart, may be pursued, passing between Kenn Reef and Frederick Reef, and to the westward of Alert Reef, carrying no more sail in the night than the ship will bear conveniently when hauled to the wind, and using every precaution against unknown dangers, which in this comparatively unexplored region may possibly still exist. If an unusual number of boobies and gannets be seen in the evening, it indicates the proximity of a bank and reef; and the direction taken by the birds, if they all go one way, as is usual in an evening, will nearly shew the bearing of the danger.

Passing about a degree to the eastward of Diana Bank, the next object of attention is the EASTERN FIELDS, or reefs, which lie a degree out from those where Torres Strait may be said to commence; their N. E. end is in lat. 10° 2′ S., lon. 145° 45′ E., which you may pass half a degree to the eastward, and from hence allow 18 miles daily for a W. N.W. current, which now runs to the westward through Torres Strait. Eastern Fields.

The best parallel for passing the Eastern Fields is in lat. 9° 45′ to 9° 50′ S., steering W. by S.; and afterwards, while there is daylight, and no reefs seen, carry all sail for PANDORA ENTRANCE, which is the best opening yet known to the strait, being 11 or 12 miles wide between the reefs which form it; its centre is in lat. 9° 54′ S., lon. 144° 42′ E. If the Eastern Fields be passed in the morning, you may possibly get through, and obtain a sight of Murray Islands before dark, without seeing the breakers; but it is more probable that the reefs will first be seen; and if then the latitude is uncertain even to 5 miles, you must haul to the wind until an observation is obtained, for by the latitude alone can the outer reefs be distinguished from each other. Pandora Entrance.

With the reefs in sight and the latitude known, steer for the Pandora Entrance if you can fetch it; but if too much to the northward, pass round the north end of Portlock Reef, which is in lat. 9° 26′ S., and haul up S.W. for MURRAY ISLANDS, in lat. 9° 53′ S., lon. 143° 59′ E., and visible 8 or 10 leagues from the deck in clear weather. It is best to approach these islands from N. E. by N., as reefs project southward and eastward from them, and anchor the first night on the north side of the largest island, or otherwise under the reefs which lie N. E. of it; but if neither can be reached before dark, haul to the wind and make short tacks till daylight, in the space between these reefs and Portlock Reef. Murray Islands. Directions for sailing through Torres Strait.

Murray Islands should not be passed, or quitted if you have anchored there, later

than 10 or 11 A.M., because the sun will get ahead, and obscure the sight before another good anchorage can be secured. The reef that lies 5 miles to the northward of the islands should be kept about a mile on the starboard hand in passing, steering W. ½ S. with a boat ahead; for in this part there are many tide ripplings, scarcely to be distinguished from the reefs. Having passed the ripplings, haul a point more southward, and after having run 8 or 10 miles from the time that the largest of the Murray Islands bore South, there will be very few reefs to the northward, and DARNLEY ISLAND will be seen. On the larboard hand there will be a great mass of reefs, and these should be followed at the distance of 2 or 3 miles, steering mostly W.S.W., and gradually more southward as they are found to trend. Some small patches will be met with occasionally, but having the boat ahead, and the commander, or a careful officer, looking out aloft, they may easily be avoided.

The leading mark throughout this part is the line of the Great South-Eastern Reefs; and the position of the ship may be known at any time, by laying down bearings of Murray and Darnley Islands on Captain Flinders' chart of Torres Strait; allowing 5° of East variation, if the ship's head be westward, and the compass on the binnacle.

Half-way Island.

Several low woody isles will appear in sight ahead, or on the starboard bow, and before reaching the end of the S. Eastern reefs, HALF-WAY ISLAND, the southernmost of them, will be seen to the S.W., which lies in lat. 10° 7′ S., lon. 143° 19′ E.; and here you should anchor for the night. If, however, this island can be passed before 3 P.M., and the sun do not obscure the sight, you may push on S. Westward till an hour before sunset, and anchor under the lee of any of those sand-banks which lie near the route, the ground being better here than in the eastern part of the strait.

Mount Adolphus.

From Half-way Island, continue to follow the Investigator's track, steering S.W. to S.W. by W., as the small reefs and banks may admit, and there is no necessity in this part for a boat to be kept ahead. The flat top of Mount Adolphus, on one of the York Isles, in lat. 10° 38′ S., lon. 142° 36′ E., will be the first high land seen, and afterwards Mount Ernest, which lies 7 or 8 leagues N. Westward; the cross bearings of these will shew your situation on the chart, until DOUBLE ISLE, in lat. 10° 27′ S., appear in sight, which makes in two small hummocks. Steer for it, passing on the north side, and haul S. Westward for WEDNESDAY ISLAND, about 3 leagues distant, which is the N. E. isle of the southern group of Prince of Wales Islands, and in lat. 10° 30′ S., lon. 143° 18′ E. Pass it also on the north side about a mile, and the same distance from Hammond Island, which lies next to it: there will be an extensive reef on the starboard hand, but the least distance between it and the islands is above 2 miles; and a W. S. W. course by compass will lead fair through the passage, in soundings from 9 to 6 fathoms.

Prince of Wales Islands.

Booby Isle.

BOOBY ISLE, the westernmost of the Prince of Wales Islands, in lat. 10° 36½ S., lon. 141° 53½′ E., by Captain King's observations, will soon be seen ahead, appearing at first like a white sand-bank; this isle may be passed in soundings of 5 to 7 fathoms, within one or 2 miles on either side, and you may anchor under lee of this isle: turtle may occasionally be procured here. From hence, steer afterwards W. by S. 30 or 40 miles, to avoid a large reef about 7 leagues W. N. W. of Booby Island, then towards the intended port, wherever you are bound, being now clear to the westward of all dangers in Torres Strait.

If the approach of night, or other circumstances, render it desirable to anchor before you reach Booby Island, shelter will be found to the N.W. of Wednesday Island,

or Hammond Island, which are the northernmost of the Prince of Wales group, and lie within about 4 miles of each other, in lat. 10° 30′ S. to 10° 35′ S., lon. 142° 10′ E. to 142° 20′ E. Prince of Wales Islands.

The route just described, and recommended by Captain Flinders, was formerly frequented; but vessels now intending to go through Torres Strait usually enter the barrier much farther to the southward, as hereafter described.

ROUTE OF THE CLAUDINE AND OTHER VESSELS.

THE NORTHERN ROUTE THROUGH TORRES STRAIT was adopted by the ships Claudine, Captain J. Welsh, and Mary, Captain Ormond, in September, 1818, bound from Port Jackson to Batavia, and having entered it by a *new* but *safe opening* in the Great Barrier, Captain Welsh gave the following directions for entering the strait by the CLAUDINE ENTRANCE. Route of the Claudine through Torres Strait.

Having made the northern part of the Eastern Fields, many parts of which have *now* shrubs on them, there will be a short day's run from thence to Murray Island, so that a ship should keep under the N. W. part of these reefs till 4 A.M., and a W. by S. course from thence will carry her between Portlock Reef to the northward, and Boot Reef to the southward; and if the latter is seen in passing, it will answer as a point of departure in running from thence to the Barrier, should an observation for latitude not be obtained.*

From Boot Reef the run is about 5 hours W. by S. to the Barrier Reef, and the latter is sometimes visible before Murray Island, although the island is seen in sufficient time to make the entrance, and if brought to bear W. ½ S., run in for the Barrier Reef with the island on this bearing, and CLAUDINE ENTRANCE may be seen and approached without fear. You will also see several other openings in the reef, but *this*, from its clearness with the above bearing, cannot be mistaken, and on its northern side there is a patch of sand 20 or 30 feet long, and about 2 feet above water. The course through this entrance is about W. N. W., and the channel about two cables wide, with very deep water: within it you will see two small patches, which must be left a considerable distance on the right hand.

Having entered this passage, haul up for the southern part of the largest of Murray Islands, and when about a quarter of a mile within the entrance of the reef you will have 14 to 16 fathoms clear ground and good anchorage, where you should stop for the night if you arrive here in the afternoon, and not at Murray Island, as the bay is covered with patches of coral and foul ground, which occasioned the loss of an anchor both to the Claudine and Mary.

Having anchored within the reef, as mentioned above, weigh at daylight and pass northward of Murray Island, about a cable's length from its contiguous reefs; steer N. W. from 4 to 6 miles, until you see a reef on the starboard side, which bring to bear about E. N. E., then the long range of reefs will be seen to the southward, and probably two or three small patches between the Northern Reef and the Southern Range,

* We made the Eastern Fields at 3 P.M., and ran W. by. S. with a fresh breeze till 8 P.M., then hauled on a wind under easy sail, making short tacks till daylight. At 7 A. M. saw the Boot Reef, which we mistook for the southernmost patch of Portlock Reef, thinking we had been set to the northward by a current during the night; we therefore stood to southward, and at noon found ourselves 37 miles South of the entrance, and discovered a reef of breakers stretching N. N. E. and S.S.W. about 24 miles, the southern extremity of which we made in lat 10° 32′ S.: here it formed a bight to N. Eastward, and rounded again to the westward, the water appearing very shoal within. This danger we named Ormond Reef. To prevent a similar mistake, a ship should keep close under the Eastern Fields till 4 A.M., as directed above.

which should be passed on the north side. You will be then rather less than a quarter of a mile North of Captain Flinders' track, in the Investigator, and the course will be West and W. S. W.; soon afterwards Darnley Island will be seen on your starboard quarter, and after passing a bank on the larboard side, you will shortly see a small woody island, being the easternmost of the cluster of woody isles marked in Captain Flinders' chart; soon after a sand-bank and reef will be visible on the larboard bow: close by this latter you must pass, and Half-Way Island will be seen bearing about S.W. by S., or S. W. ½ S. Having gained this island, the most dangerous part of the passage is over, and the foregoing directions, by Captain Flinders, may then be followed. In the track between the northernmost of the Prince of Wales Island and Booby Island, the Mary had 3 fathoms on a shoal, which was named LARPENT BANK, and the Claudine had 6 fathoms on its edge; from the western extreme of Prince of Wales Island it bears N. W., and E. by N. ¾ N. from Booby Island.

The Alert struck on a shoal in lat. 9° 52′ S., lon. 140° 50′ E., which appeared to be about 200 fathoms in length, and about 50 yards broad.

Route of the Mary Ann through Torres Strait.

The northern route through TORRES STRAIT was also adopted by Captain Warington, in the ship Mary Ann, bound to Batavia; he left Port Jackson, June 24th, 1822, with the Almorah and Richmond in company, and his remarks may be useful to navigators pursuing that route.

Made Bird Islet on Wreck Reef, July 2nd, to test the chronometers; July 9th, at noon, saw the Eastern Fields, having experienced a *mean* daily current of 18 miles to the north-westward between these places. From Port Jackson to the Eastern Fields, kept under plain sails in the night, and the sea being smooth, kept the back stays abaft the tops, with lower lifts slack, ready for bracing the yards round in an instant, if necessary. At 2¼ P.M. July 9th, when the N. E. end of the Eastern Fields bore S. ¾ W. 3 or 4 miles, steered North 7 or 8 miles under easy sail, then under top-sails during the night, sometimes braced to the wind, steered W. by S. and occasionally W. S. W. at a low rate, usually about 3 knots, with the lead going. Observed the meridian altitudes of six stars and the moon, during the night, which gave lat. 9° 56′ and 9° 57′ S., and took altitudes of stars for the time by chronometers, which gave lon. 145° 15′ E. It was considered of *primary importance* to preserve the parallel of latitude, as some ships, between the Eastern Fields and Boot Reef, having been set to the northward, perceived at daylight that they were among *unknown* reefs, and obliged to wait for the noon observation to ascertain their true situation; after which time, the sun, being to the westward, obscures the view, rendering it dangerous to cross the Barrier Reef, by which ships may be liable to detention another night among innumerable dangers. At 8 A.M. saw the Boot Reef from the mast-head bearing W. by S. ½ S., and at 9, passed to the northward of it at half a mile distant, bearing S. ½ E. At 11½ saw Murray Island bearing West, and soon after saw the breakers on the Barrier Reef; a quick succession of squalls at this time prevented any thing being seen above a quarter of a mile, and the weather being so unfavourable, made it necessary to heave-to occasionally, although at noon were not far from the Barrier. Observed lat. 9° 53′ S., lon. 144° 24′ E., at noon, July 10th, and in an interval between the squalls at 2½ P.M. passed through the Barrier in an opening, rather less than a quarter of a mile wide, with Murray Island bearing W. ½ S., the course being from W. by N. to W.N.W. while sailing through the passage. At 4 P.M. anchored under Murray Island in 24 fathoms, foul ground, it bearing S. S. E., distant about 1¼ miles, the westernmost island S. S. W. ½ W., and breakers on a reef W. ½ N., about a mile distant. Observed lat.

Anchorage at Murray Island.

9° 53′ S., lon. 144° 1¾ E. by chronometers. The weather being very unfavourable, did not leave the anchorage at Murray Island till the 12th, and then pursued the track through Torres Strait to the westward, recommended by Captain Welsh, of the Claudine.

The northern route through TORRES STRAIT was also adopted by Captain B. Osman, from Port Jackson, in an American ship bound to Bengal, for which he gives the following remarks.

We left Port Jackson in May, and when in lat. 9° 46′ S., steered West for Torres Strait, and about lon. 145° 45′ E. fell in with the Eastern Fields, which were small detached reefs. Afterwards entered the Barrier Reef about lon. 145° E., and 12 or 13 leagues to the eastward of Murray Island, which we passed on the north side; then steered W. by S. ½ S., with the view of getting more to the southward and to avoid the coast of New Guinea; but unfortunately, having no observation for two days, although steering as above, we found ourselves on the third day in lat. 9° 21′ S., and the high land of New Guinea in sight from the deck. Here we made little progress; the strait in this part being covered over with shoal patches, coral rocks, and reefs innumerable, made us endeavour to get to the southward, but we were obliged to remain at anchor most of the following six or seven days, on account of thick, squally, blowing weather. When the weather became moderate, we weighed and worked to the southward till in lat. 10° 5′ S., and found no difficulty on this parallel, in steering for Prince of Wales Islands.

We had been led to believe that the tides in Torres Strait were very weak, and set nearly East and West; but in the middle of the strait we experienced their velocity on the springs to be from 3 to 4 miles an hour, the flood, which then rises about 6 feet, setting N.W. by W. ½ W., the ebb about E. S. E., and their velocity is probably not less than 2 miles per hour in neap tides. This renders particular attention to the tides necessary when observations are not obtained, to prevent being set over on the coast of New Guinea, as we were; which, together with bad weather, lengthened our passage through the strait to 13 days. Tides.

ROUTE OF THE INDEFATIGABLE.

THE ROUTE OF THE INDEFATIGABLE* towards Torres Strait, by entering the Barrier Reef far to the southward, is preferable to the tracks described above, as the Indefatigable, drawing 18 feet water, got safely through it in little more than two days, with the Cochin, a small ship, and a brig, which entered the Barrier with her. Indefatigable Route.

These three vessels left Port Jackson, July 13th, 1815, and knowing, by the Pandora track, that the Barrier Reef afforded no eligible entrance between lat. 9° 56′ S., at the Pandora entrance, and 11° 25′ S., where she was wrecked, they resolved to endeavour to find an entrance through the Barrier farther South, nearly opposite the Sir Charles Hardy Islands. August 3rd, A.M., steering westward, the Barrier Reef was discovered, and an opening seen, which proved to be 4 or 5 miles wide; this was entered at noon, and by observation found to be in lat. 11° 50′ S., about lon. 144° 10′ E. by an indifferent chronometer. The reef was dry on the north side the entrance several miles; that on the south side was 10 or 12 feet above the water, consisting apparently of sand and large masses of rock, with others under water. Steered about 6 leagues

* Communicated by Joseph Arnold, F.L.S., who was a passenger in the Indefatigable, and who made a chart of her passage among the reefs, accompanied by remarks.

westward after entering the Barrier till 5 P.M., August 4th, sounded and got no bottom, and being in an open space surrounded by reefs, excepting a clear opening to the N. N. W. directly to leeward, made short tacks all night, keeping a boat to leeward. At daylight, were within two cables' lengths of a reef, having no soundings with the hand-lead close among the breakers.

At daylight, the ship in company was seen about 10 miles to the N. E., with two or three reefs between us, and an opening appearing to the N.W., we steered for it, in hope that she would find a passage among the reefs and join us, which she did. After steering in different directions, making a course about N. N.W., at 9 A.M. passed to the westward between two reefs high above water, about 2 miles apart; steered N.W. and westward, to round the south end of a sand-bank, and at noon observed lat. 11° 25′ S., the sand-bank then being the only danger in sight from the deck, and bearing S. E.

August 5th. At 1 P.M. steered westward, to round the south side of extensive reefs seen to the N.W., and perceiving by the colour of the water that we were in shoal soundings, immediately got 4 and 3¾ fathoms, shells and sand. At 2 P.M., steering N.W. and W. N.W. between extensive reefs to the northward and eastward, and a long dry reef to the southward, no ground at 15 fathoms, wind S. S. E., sailing at the rate of 7 knots. At 4 P.M., steering N.W. between extensive reefs above water, saw two hills to the westward, supposed to be on the main, having to the northward a point of land covered with trees, distant about 10 miles, which is probably an island. At 5 P.M., rounded the north point of the reef to the westward, and at 5½ P.M., anchored within a mile of its N.W. end, in 15 fathoms, stiff clay, which reef is extensive, with a basin of smooth water in its centre, and a hillock of sand on its north end, crowned with a few bushes. An island covered with trees bore from our anchorage about W. S.W., with reefs stretching to southward and northward, and on the N.W. reef appeared a single tree; the main land was obscurely seen bearing from South to W. N.W., and there were openings between the reefs at S. by E. and North.

At 8 A.M., weighed with a strong breeze at S. E., steered northward, and at 10 passed on the west side of a small island covered with trees, having a reef projecting to the northward: the main land to the westward moderately elevated. At 11¼ A.M., entered between two extensive reefs, in a passage little more than a mile wide, steering through to the N.N.W., had soundings of only 4 and 5 fathoms, and soon saw Mount Adolphus ahead, which we thought at first to be Turtle Island, also a small woody island bearing W. by N., distant about 3 miles.

At noon, observed lat. 10° 36′ S., being then through the passage, and abreast of Mount Adolphus, too far advanced to the northward to proceed between Cape York and the York Islands, which is probably the best passage; steered to round the latter. At 1½ P.M., August 6th, in passing on the north side of the northernmost York Island above a mile distant, struck, and grounded on a shoal in 13 feet water, where the ship lay till the tide rose and floated her off at 8 P.M. into deep water; then anchored, with the eastern extremity of the northernmost York Island bearing E. ½ N., distant 3 miles, a sandy beach on ditto E. by S., westernmost extremity of ditto S. S. E., Mount Adolphus on the largest island S. E. ½ E., Cape York S. by E., Possession Island S.W. by S., a rock about 4 miles distant W. ½ S., Horned Hill W. ½ N., Double Island N.W., and Mount Ernest N. N.W., the tide setting strong to the eastward.

Grounded near York Islands.

We remained at anchor till the 7th, then weighed at daylight, and steered S.W. ½ S. for Endeavour Strait with a boat ahead, the soundings from 5 to 10 fathoms. The ship and brig had left us on the 6th, but after passing through Endeavour Strait, we again fell in with them; they were now in want of surgical aid, as the Captains of

both vessels and some of their people had been speared by the natives on the preceding evening in attempting to land on Possession Island. The natives seemed to be very numerous, and had lighted large fires on the largest island of Prince of Wales group, and on many parts of the main land.

When through the strait, steered towards Booby Island, but grounded twice for a short time, in passing over the spot where 3 fathoms is marked in Captain Flinders' chart; the brig kept more to the southward, and had not less than 6 fathoms water. At night we anchored under Booby Island, and procured some turtle. Grounded between Endeavour Strait and Booby Island.

This SOUTHERN ROUTE of the Indefatigable appears safe, and shorter than the northern route, but caution is required in a ship drawing 18 feet water, or upwards. To proceed by it, the passage through the Barrier Reef opposite the Sir Charles Hardy Islands ought, if possible, to be entered early in the morning, by which a ship will soon get to the westward into soundings, and may obtain good anchorage before night, and avoid the danger of keeping under sail among the reefs. A boat may be kept ahead, with signals to shew the depth of water in some parts of the passage; and a careful officer, with other trusty persons, ought to look out sharply from the mast-head for the shoals, and an anchoring place should be sought for before night. Directions.

The Indefatigable's anchoring place is a good station to stop at on the second night, and may be known by the two hills on the main, two small islands covered with wood, and the reef with a single tree on it. Leaving this anchorage at daylight, the small bushy island and reef must be left to the right, and soon after Mount Adolphus will be seen. It is preferable to pass between it and Cape York in the track of Captain Cook: the course from York Islands to Endeavour Strait is considered safe, with depths from 5 to 10 fathoms. If you pass through the narrow part of the strait when the tide runs strong to the eastward, borrow towards the islands that form the southern side, as the tide sets then strong towards the northernmost island. With the wind fair, you may reach Booby Island in the evening, passing to the southward of the two spits marked with 3 fathoms in Captain Flinders' chart, on which the Indefatigable struck.

From the time the Indefatigable entered the Barrier, in lat. 11° 50′ S., opposite to the Sir Charles Hardy Islands, until she finally cleared Torres Strait, in lat. 10° 37′ S., she was little more than 24 hours under sail, exclusive of the first night, during which she endeavoured to keep her station by making short tacks within the Barrier Reef; and although she ran about 140 miles on account of the various directions of the reefs, the distance in a straight line is probably not more than 110 miles. The wind kept brisk about S.W. during the whole of the passage among the reefs, with smooth water, and there appeared to be a weak north-westerly current.

ROUTE OF THE LALLA ROOKH.

THE ROUTE OF THE LALLA ROOKH towards Torres Strait, adopted by Captain Hugh Steward, of the ship of this name, after leaving Port Jackson, and having touched at Port Macquarie, in 1825, with convicts, is near the Indefatigable's passage through the Barrier. Lalla Rookh Route.

Having a northerly wind at leaving Port Macquarie, which veered afterwards to S.W., the Lalla Rookh passed to the south-eastward of Frederick Reef, Wreck Reef, and Diana Bank, about 50 miles: when about 40 miles N. E. of the latter, steered for

the entrance of the Barrier Reef, and when in lat. 11° 55′ S., being within 5 leagues of the reefs by computation, steered W. ½ S., and soon saw breakers ahead at 9½ A.M., the wind blowing strong at E. S. E. with hard squalls, and a high sea running. At 10, entered the outer edge of the Barrier Reef, in a passage about 6 miles wide, being then in lat. 11° 55′ S., lon. 144° 2′ E.; steered N.W. about 4 leagues, with reefs on both sides, and several small openings on the left hand. Perceiving breakers ahead, steered S.W. through an opening in the reefs, continued on this course 6 miles, then steered W. by N. 3 leagues in a clear channel, and saw the Sir Charles Hardy Islands bearing about W. ½ N., and a sand-bank on the larboard bow, which we passed to the northward; saw another a little farther to W. N.W., and a third sand-bank in a line with it, but nearer to the islands, all of which are passed to the northward. Excepting these three sand-banks, the space in sight appeared clear of danger. Steered for the north end of the northernmost island, passed it within 1½ miles, and steered about W. by S. ½ S. towards the main land, and had a reef on the starboard side, extending as far as the eye could reach. When within 5 or 6 miles of the islands fronting Cape Granville, steered N. Westward for Bird Islands, and had several sand-banks and shoals on the starboard side; at 4½ P.M. passed to the eastward of this group of isles, and anchored under their lee, in 10 fathoms, soft clay, about half a mile off. Sent a boat on shore, found many young turtles on the beach. Weighed at daylight, and steered about N. ½ W. for another group of islands, which we named Lalla Rookh Group, where many natives appeared. In approaching this group, a very dangerous reef extends to the westward, with several sandy islands and banks to the eastward; but by keeping a good look-out every danger will be seen. We passed to the eastward of this group; saw a passage to the westward between it and a small sandy island, from which an extensive reef projects to the eastward, which we passed on the east side; and having cleared this reef, steered N.W. between it and two other sandy isles, which were left on the starboard side, then steered W. N.W. to pass between two small islands; the westernmost of these we named Aspinall Island, which has an extensive reef to the S. E.; the other we called Innes Island, and left it on the starboard side, then steered along shore for Turtle Island, and had 4½ fathoms on a shoal about 3 miles to the S. E. of it, but deepened to 10 fathoms in hauling to the eastward: passed the island at 1½ miles distance, but 2 miles would be safer. From Aspinall Island the coast appeared to be clear of shoals, excepting two or three small islands with reefs adjoining, distant 2 or 3 miles off shore, there being a clear large space of sea after passing Turtle Island, although reefs were visible at a great distance on the starboard side. Soon saw Mount Adolphus, and steered for it; kept about 4 miles to the eastward of the islands that lie East of Cape York, and steered N. N.W. in passing them, until in mid-channel between them and Mount Adolphus, then W. N.W. and N.W. by W. for a rock* situated to the north of Cape York, which was passed to the southward 1½ miles distant. Steered then for the N. E. point of Wednesday Island, and passed it about 2 miles distant, having kept the lead going, and had no ground at 8 fathoms. From hence, steered W. by S. ½ S. for a rock above water, to the northward of Hammond Island, which passed about one mile distance; saw a dangerous reef extending to the N.W. and westward, as far as the eye could reach from the mast-

* September 7th, 1822, Captain Ashmore, at noon, made the observed lat. 10° 44′ S., when a rock was seen under water, distant a cable's length, in one with the small island off Mount Adolphus, N. 20½° W., the low island N. 37° E., about 4 miles; rocks above water N. 75½° W., distant 1 mile, detached from each other, and extending about a mile N.W. by N. and S. E. by S.; a distant island in one with the low point of Mount Adolphus N. 50° W. Variation of the compass, with which these bearings were taken, 6° 13′ E.

head. After rounding the rock, steered W.S.W. until the Shoal Cape bore S. S. E. ½ E., then steered for Booby Island, which was seen from the deck when abreast of Shoal Cape, and we passed that island at 7 P.M.; having been only 33 hours since entering the Barrier Reef, and were 14 hours of that time at anchor under Bird Islands. In entering the Barrier Reef, by the passage described above, there appears to be little difficulty or danger, as the reefs and shoals may always be discerned; but the morning is the best time to enter, as a ship will, in such case, reach a safe anchorage before the evening: by entering about noon, she may reach the Sir Charles Hardy Islands before night; but the Barrier Reef ought not to be entered after noon, unless it be necessary to wait for an observation when uncertain of the latitude. Directions.

INNER ROUTE RECOMMENDED BY CAPTAIN KING.

In Captain P. P. King's account of his Voyages, and surveys of the coasts of Australia, Vol. II. Appendix, p. 393, excellent directions are given for the INNER PASSAGE from Port Jackson, which ought to be possessed by navigators proceeding to those parts, accompanied by the Admiralty charts, published from the surveys of that scientific officer, and those of the late Captain Flinders; which may be had from the chartsellers appointed by the Admiralty. Captain King is convinced that the Inner Route possesses great advantages over the usual route outside the great Barrier Reefs. "The passage up the North-east coast," he says, "is not affected by the Monsoons. The South-east trade blows up the coast during the whole year with little variation, save that during the months of June, July, and August, it is occasionally, although rarely, suspended by North-easterly winds, with thick rainy weather. To the southward of Cape Grafton (16° 51′ S.) this interruption is of more frequent occurrence; still, however, the prevailing wind to the northward of Breaksea Spit is from the S. E., and there will be no difficulty in making an expeditious passage." Inner Passage recommended by Capt. King.

ROUTE THROUGH ENDEAVOUR STRAIT.

THE INNER ROUTE, towards ENDEAVOUR STRAIT, was pursued by Captain Cripps, in the brig Cyclops, bound from Port Jackson to Bengal, in 1812. His vessel being crank, he was fearful of passing outside the Barrier Reef, lest he should miss the proper entrance, and be unable to beat off from it: he therefore made the land at Buzzard Bay, then followed Captain Cook's track within the reefs, and passed through Endeavour Strait. Throughout this track the sea was always smooth, with moderate depths for anchoring at night, which every ship ought to do; and if a good look-out be kept in the day, Captain Cripps thinks this passage may be followed in a small ship, or in one of moderate size, if not drawing much water. Inner Route to Endeavour Strait.

ENDEAVOUR STRAIT is not now much frequented, the passage outside having been found safer for large ships; but it is proper to state, that on the northern side of the strait, about 3 leagues to the eastward of Cape Cornwall, a harbour was discovered in January, 1823, by Captain J. Lihou, of the ship Zenobia, bound from Manila to South America, which he named Port Yarborough; it is in lat. 10° 45′ S., lon. 142° 12′ E. by account. Two islands front the mouth of the harbour on the eastern side, the largest of which, called Falcon Island, is near the N. E. point of the harbour, and the other island has rocks projecting from it, and a bar extending to the western shore, where there is a hill called Mount Penleaze, and about half a mile inside of the mount, fresh water was obtained, but whether the produce of a spring, or from the rain

which falls at this season, could not be ascertained. The Zenobia, in crossing over the bar, had 20 feet water, and from 6 to $4\frac{1}{2}$ fathoms, soft ground, inside in the harbour; the passage between the islands was not examined, on account of the unfavourable state of the weather preventing observations being made, during the short time she lay here to repair her rudder, which had been knocked off on a coral rock, and she lost all her anchors in proceeding through Torres Straits by the Murray Island Passage, being the first vessel which succeeded in sailing through these straits from West to East; she was obliged afterwards to anchor with guns in proceeding through this dangerous route, with cloudy weather, often attended by rain; and when clear of the Barrier Reefs, she proceeded to the southward, between New South Wales and New Caledonia, and saw the Sir James Saumarez Shoals, and others already mentioned.

Inner Route by the Kangaroo.

THE INNER ROUTE, above mentioned, was also followed by Lieutenant Jeffries, in H. M. brig Kangaroo, which vessel sailed from Port Jackson, April 19th, 1815, bound to Ceylon, with a detachment of troops. Having thick weather as Wreck Reef was approached, rendering it unpleasant to run for the narrow channels of the Barrier Reef, the passage inside the Great Barrier was pursued. April 28th, she rounded Breaksea Spit, at Sandy Point, Harvey Bay, and filled up her water at Port Bowen, where she was detained several days by a gale of wind. From hence, the track of Captain Cook was followed as nearly as possible, inside of Northumberland and Cumberland Islands, through Whitsunday Passage; and such parts as Captain Cook had passed in the night were at this time passed in the day: at Cape Sandwich, some fruit was obtained from the natives, who appeared friendly. Having on the 29th passed Cape Flattery and Endeavour River, where Captain Cook steered out from the coast, the Kangaroo continued by day to sail along that unexplored part of the coast, anchoring at night under some convenient reef or shoal; these were numberless, but a clear passage was found from 3 to 5 miles off shore; and from 7 to 9 miles off, the continuation of the reef and sand-banks appeared, which was first discovered at Cape Grafton. In passing along the coast, between Cape Flattery and Cape Weymouth, a large group of islands was discovered, named by Lieutenant Jeffries, Flinders' Group; also an extensive bay or gulf, at least 30 miles in depth, which was called Princess Charlotte Bay, the neighbouring coast presenting a fertile aspect, interspersed with trees. June 1st, in lat. 13° 32′ S., lon. 143° 47′ E. by lunar observation, passed within 10 yards of a mushroom coral rock, about 4 feet under water, but the rays of the sun prevented the red colour of the water over it from being seen till closely approached. About 2 miles westward of Bolt Head, grounded on another coral shoal, which was not discerned, the soundings on this part of the coast varying from 5 to 20 fathoms. On the 6th, rounded Cape York, and found it to be an island, and not part of the main land, as hitherto supposed; anchored here during the night, and passed through Endeavour Strait on the 7th, carrying from 3 to $3\frac{1}{2}$ fathoms water, about half flood, till within a few miles of Booby Island; anchored in the night, and arrived at Timor on the 19th. Here she remained till June 26th, and arrived July 24th in Colombo Road, Ceylon. Several small ships have pursued the Inner Route, by entering the Barrier Reef far South, and keeping along the coast, or in its proximity, where the water is always smooth, with moderate depths for anchoring in the night. But although this route may be used with proper caution, much greater delay is experienced by anchoring always in the night, than in the other routes, where the Barrier is entered farther to the northward, and thereby the passage through, amongst the reefs and dangers, is much shortened.

REMARKS ON THE PASSAGE FROM PORT JACKSON TOWARDS TORRES STRAIT, BY CAPTAIN TOWNS.

The following remarks on the passage from Port Jackson towards Torres Straits have been communicated by Captain Robert Towns, of the ship Bonavista, which vessel was wrecked on Kenn Reef, 18th March, 1828; and as they appear to be the result of great experience, are introduced here as a farther development of this intricate navigation. Directions by Captain Towns for sailing from Port Jackson.

DEPARTING FROM PORT JACKSON before the middle of April, or with a northerly wind, it is proper to avoid the coast, and obtain an offing, as a southerly current prevails from September until April in fine weather, and in all seasons with a northerly wind. Having reached lon. 157° or 158°, you will be enabled to steer for the east end of Wreck Reef with a free wind, which is of consequence, as the trade wind usually hangs from the eastward early in the season, with thick, showery, squally weather. If you leave Port Jackson with a southerly wind, or after the middle of April, it will not be necessary to proceed so far to the eastward, and the track of the Cumberland, Captain Flinders, may be adopted, or a little more easterly, but with great caution, as a reef is said to have been seen in 1826 to the southward of Cato Bank. As you approach Wreck Reef, the greatest attention is indispensable, to guard against the currents; and on no account pass it without sighting Bird Island, on the eastern part, in order to prove the chronometers, and have a correct departure. From hence, the Cumberland's track may be pursued as far as lat. 15° S., passing between Kenn Reef* and Frederick Reef, and to the westward of Alert Reef† and Diana Bank. Having reached lat. 15°, a course more westerly may be followed, to fall in with the Barrier Reef, nearly opposite Sir Charles Hardy Islands, by reducing the latitude to 12° 10′ or 12° S.; when in lon. 145° E., then steer West for the Barrier, where several safe passages through it will be found between lat. 12° 10′ and 11° 55′ S. As you approach, a reef detached from the Barrier may probably be seen, but endeavour to make it in lat. 12° 0′ S., lon. 143° 55′ E., where an open space will be perceived on either side; this detached reef appears to be 3 or 4 miles in circumference, with smooth water in the centre, and several small rocks on the N. W. side. When off its eastern side, breakers will be visible from the mast-head, their eastern extremity bearing N. E. by N. about 10 leagues distant, and trending from thence to the westward; at the same time the reef to the southward will bear about South or S. by W., distant 8 or 10 miles, and trending from thence to the westward and northward. Passages through the Barrier Reefs.

* The Bonavista was wrecked on this reef, March 18th, 1828; having passed about 15 miles to the eastward of Bird Island by chronometers, but did not see it. Shortly afterwards, the weather became squally, with heavy rain, the wind varying between E. N. E. and E. S. E., with a cross sea, and having been obliged to run to leeward by the violence of some of the squalls, hauled up N. by W. after midnight, to guard against Frederick Reef, naturally expecting the current to be setting to the westward. But about 30 minutes after midnight, broken water was seen on the lee-bow, the helm was put down, but the vessel not coming round, was immediately among the breakers, and become a complete wreck in three minutes. The current was found setting over the reef at the rate of 4 knots to the *northward*, and must have carried the vessel 20 miles N. Easterly in 6½ hours; which proves the necessity of following the advice of the late Captain Flinders, by keeping a good look-out and carrying reduced sail in the night, on account of the uncertainty of the strength and direction of the current in this dangerous navigation, particularly in the blowing weather which usually accompanies the change or full of the moon, and it was at the moon's change that the above-mentioned ship was wrecked.

† The brig Venus was wrecked on this reef in 1826, having drifted upon it whilst lying to during the night, and found a very strong current setting over the reef.

After passing to the northward of the detached reef at $1\frac{1}{2}$ or 2 miles distance, steer West until you approach the Grand Barrier, distant about 8 miles, trending North and South, or rather forming a deep concavity. When it is approached within 1 or $1\frac{1}{2}$ miles, steer along its edge to the northward, keeping a good look-out from the mast-head in case there should be any detached patches: if the weather is clear, one or two sand-hills will be perceived within the main barrier, the southernmost of which is a guide for the passage shortly to be described. As you run along the edge of the Barrier, several safe openings or passages will be seen through in a S.W. or W.S.W. direction; but the one now to be mentioned, named Stead Passage, I have passed through twice, and it may be distinguished by the following marks. In running to the northward, after having passed two or three small openings, and approaching that part of the reef which trends to the N. E. with high breakers, the two last or northern passages will be seen, the northernmost opening at W. N. W. or N. W. by W., which appears very clear. About 2 miles to the southward of this entrance is the passage mentioned, and in lat. 11° 56′ or 11° 57′ S., running through the reef in a W. S. W. direction, and as soon as you open it haul for mid-channel; if the weather be clear, the southern sand-hill will be seen about a sail's length on with the S.W. point of the reef which forms the channel to the northward, and bearing about W. by S., and when in a fair-way for Sir Charles Hardy Islands, will bear W. $\frac{1}{2}$ N. If hazy weather obscure the sand-hills, when you enter the passage in the Barrier, a small dry sand-patch on the N. E. point of the reef will be seen, which forms the south side, and two large black stones, resembling turtle at a distance, on the west side, and a dry sand-bank on the N. W. side of the reef, which forms the north side, which are sufficient to distinguish *this* from any other passage; yet the other to the northward, running through W. N. W., seems equally clear, and the most direct, as appeared from both sides of the Barrier.

Stead Passage. Directions.

Having entered the channel above described, keep a little to the northward of mid-channel, to avoid discoloured water, which will be visible from the mast-head; although I have passed over in 12 fathoms, it will be advisable to give it a berth, as there is plenty of room to the northward; and when through, you have a fine clear passage and smooth sea, as far as the visible horizon. After rounding the S.W. point of the north reef at half a mile distance, steer W. by N. northerly until you make the second sand-hill, which pass on the north side at three-quarters of a mile distance, and from hence you will see a third sand-hill, smaller and lower than the two former, bearing about W. N. W. from the second sand-hill; pass this also on the north side at the same distance: all these sand-hills have reefs projecting to S. E. and N. W.

Time for entering the Barrier.

It is necessary to observe, that the best time to enter the Barrier is in the morning or early in the forenoon; for in such case, with a good breeze, you will reach Bird Islands before night; but if the Barrier is entered after noon, it will be advisable to anchor under the second or third sand-hill in 9 or 10 fathoms; otherwise, run for the Sir Charles Hardy Islands, and there anchor for the night; but this should only be done in a case of emergency, as from the latter place you will haul out N. E. by E. to clear Cockburn Reef, and gain a fair-way, which may cause delay if the wind be far easterly, although regular tides were experienced in the Asia, when at anchor off Sir Charles Hardy Islands, the flood setting to the westward, and the ebb to the E. N. E. By anchoring under the second sand-hill, a course from thence W. by N. or more northerly will clear the east end of Cockburn Reef, which bears from Sir Charles Hardy great island N. E. by N., and from Cockburn Island East; give this reef a berth of 1

to $1\frac{1}{2}$ miles in passing, as some shoal patches lie detached to the northward of it; one about $1\frac{3}{4}$ miles North of its eastern extremity, and the other about 3 miles from its central part, bearing about N. N.W. from the west end of Sir Charles Hardy Island, 7 miles distance, and the same distance westward of the former patch. Afterwards steer West until you approach the extensive reef to the N.W. of Cockburn Island, keeping always a good look-out from the mast-head for any patches of reefs that may exist: steer along the verge of this reef at a reasonable distance, edging to the northward, with the lead going, until you make a small sand-bank to the W. N.W., and when this bears West, if the weather be clear, you will see the Bird Islands open to the northward of the sand-bank; then haul up gradually for Bird Islands, giving the sand-bank a wide berth; pass between it and another sand-bank and reef, which bear from the former about N.W. 6 miles distant, with a clear channel of 16 and 19 fathoms between. Having passed these two last dangers, Captain King's chart* of Torres Strait will be found very correct, and the best guide; there is now an open channel, from 6 to 10 miles wide, between the main of Australia and the reefs and islands fronting that coast, which form the channel, and afford shelter from the sea.

If the Barrier is entered before noon, and the passage be pursued for Bird Islands, great caution is requisite when the sun is to the westward; but there is anchorage throughout the passage from the Barrier to Booby Island. If the Barrier is entered late in the afternoon, and there be not sufficient daylight to reach the sand-hills, you may anchor immediately inside the reef. If at anchor under the sand-hills, weigh at daylight, and with the usual breeze you will reach good anchorage at Mount Adolphus, Turtle Islands, or Cairn-cross Island. The foregoing passage, directly to the northward of Cockburn Reef, discovered by Captain Towns and Captain T. F. Stead, in the Asia, is certainly the best yet known, and with proper caution may be considered quite safe: it is much safer than the dangerous passage to the westward of the Sir Charles Hardy Islands, on account of the extensive reef and rocky ground which lie to the westward of those islands, and which we sounded during one day, in order to buoy off a channel for the Asia, which however was found impracticable, although many spots may be found with 3, 4, or 5 fathoms water, where vessels might cross over, by picking out the passage from a mast-head view; yet the risk is great, particularly with a large ship.

Remarks on the passage to the westward of Hardy Islands.

If from necessity a vessel be obliged to attempt this passage, the following remarks may be of utility. Steer from the Sir Charles Hardy large island W. by S. and W. S.W.; with the lead going, you will carry irregular soundings from 8 to 6 fathoms along a very extensive bank, which lies to the S.W. of the islands. As you approach the danger, which lies about 6 miles from them, the vessel should be under easy sail, to enable you to see the rocks in time to avoid the danger, particularly if the sun be ahead; a dry sand-bank will be seen to the southward. When this bank bore South, the Bonavista had crossed the danger, and in deep water, and then steered along the south side of Cockburn Reef, which is dry in many parts, carrying 12 fathoms water within two cables' lengths of it. A middle ground lies between this reef and the islands off Cape Grenville, about 2 miles to the westward of the dry sand-bank, on which middle ground had 5 fathoms, then edged to the northward, and deepened into 12, and followed the course of the reef until nearly abreast of Sunday Island, when Bird Islands were seen bearing N. N.W.; anchored under the N.W. side of the latter, in 10 fathoms, sand and coral, at 6 P.M., having entered the barrier at $10\frac{3}{4}$ A.M. on the same day.

* North-East coast of Australia, Sheet 3, published by the Admiralty.

Bird Islands. From Bird Islands, the track on Captain King's chart is the best guide. Bird Islands appear three in number, low and bushy, and united by coral patches: all around them the anchorage is tolerably good, and on the north side there is good shelter from the southerly winds. The flood rises considerably here, and at Cairn-cross Island, and sets strong to the northward.

The Bonavista, after weighing at daylight from the Sir Charles Hardy Islands, in pursuing her course to the northward, left Cockburn Island and Turtle Island to the westward, and several extensive reefs to the eastward: here the channel is contracted until you pass Turtle Island, which several vessels have done on the western side, where they found dangers and shoal water. Capt. Proctor, in 1826, discovered a bank $1\frac{1}{2}$ miles W.N.W. from Turtle Island, having on it 6 feet water. Shortly after leaving Cairn-cross Island, Mount Adolphus may be seen, which with Cape York and Albany Islands are high. A bold rock lies to the northward of Cape York, which may be seen from Albany Islands in clear weather; which rock should be passed to the westward, as a reef projects from it about half a mile to the N.W.; pursuing a N.W. course or a little more westerly, as the current may require, to pass to the eastward of Wednesday Island. The channel here again becomes more contracted between the islands on the South and an extensive reef on the North. Round Wednesday Island at a moderate distance, and as you haul up, guard against a long flat that lies to the westward of it; then, in steering to the westward, pass at rather less than a quarter of a mile to the northward of a high bold rock, which lies off Hammond Island, then haul W.S.W. or more southerly for a *patch of rocks* above water, about 4 miles distant from the bold rock: this patch requires caution, as a small reef projects about 2 cables' lengths to the northward, with apparently deep water between it and the patch: pass as close to this reef as can be done with prudence, to avoid dangers said to exist to the northward; this being the most intricate part of the passage, where some shoal spots were seen in 1835, not apparently marked in the chart. After passing the last-mentioned rocks, Booby Island will be seen from the mast-head in clear weather, for which steer W. by S. or West, taking care that it be not brought to the westward of W.S.W., when you approach it within 8 or 10 miles, to avoid the shoal or mud-bank, about 3 miles East of it, and extending E. N. Eastward, upon which several ships have grounded. This passage from York Islands to Booby Island is preferable to Endeavour Straits, particularly in a vessel drawing above 12 feet water. In 1827, the Bonavista grounded off Cape Cornwall 4 miles from the shore, with the north land bearing N. by W., and a bluff point, which was thought to be Possession Island, East. While running in the night, steering W.N.W., had 8, 7, then 6 fathoms; hauled to the westward, but immediately grounded, and at half a cable's length to N.W. found only 6 feet water, but deep water to the southward. After floating off the shoal, hauled to southward and anchored in 8 fathoms; next morning, found difficulty in crossing the extensive flat, on account of many shoal patches scattered over it, and the water here being thick and muddy, these patches were not visible. Although many vessels have passed through here without grounding, others have not been so fortunate, and in large vessels the risk is considerable.

The several passages compared. In concluding these remarks on the foregoing passage, it should be stated that entering the Barrier opposite the Sir Charles Hardy Islands, is considered far preferable to that formerly pursued by the Eastern Fields and Murray Island; the latter route being more circuitous, and unless you fall in with the Eastern Fields very early in the morning, and have a strong breeze to carry you to Murray Island, 100 miles distant from the Fields, you will be liable to error in the reckoning by uncertain currents during the night,

which has proved fatal to several vessels. At Murray Island, and inside the barrier, being the first anchorage where the ground is coral, and the water deep, you are liable to suffer the loss of anchors; and if the wind be far southward, which often happens, vessels must remain at this place; several have from this cause been detained at anchor under Murray Island eight and ten days, by southerly winds and fogs, although this is not usual. After leaving Murray Island you have no guide or land-mark, consequently the vessel must be directed by a person marking the dangers from the mast-head; this, however, is very difficult if the sun be ahead, or near the line of sailing, which is the case every afternoon.

On the contrary, by running for Stead Passage, or Brown or Winter Passage, a little farther South, near the Sir Charles Hardy Islands, there is anchorage directly within the Barrier, and if uncertain of the latitude as you approach near it, there is sufficient time after the noon observation to reach safe anchorage; if the evening is near, at entering the Barrier, you can anchor immediately under the reef. These passages have also the advantage of land-marks and cross-bearings not only through the Barrier Reef, but throughout the channel afterwards; although the necessity of a good look-out from the mast-head is indispensable, the land-marks will prevent the mistaking of one reef for another.

The course along the coast being nearly North, renders the prevailing southerly winds favourable, neither is this route subject to fogs, and from Bird Islands the sun cannot obscure the shoals from your view in steering the channel course; these are advantages, exclusive of the usual wide channel between the coast and the reefs, which make this route far preferable to that dangerous northern passage from Murray Island to Wednesday Island.

The brig Guide, Captain Ashmore, with the ships Frederick and Portland in company, August 29th, 1828, entered the Barrier, apparently by Stead Passage, a little before noon, through a gap about three-quarters of a mile wide, steering W.S.W.; but there were two green patches in the middle of the passage, over the tail of one of which the Frederick passed, and thought there were 6 or 7 fathoms water over it. The latitude of this passage was 11° 57′ S., observed at noon, when a little inside the Barrier; and another opening was seen about a mile to the northward of the channel, by which these ships entered the Barrier.

In lat. 11° 36′ S., lon. 144° 8′ E., there is an opening in the Barrier Reefs, through which the Ann passed in August, 1825, on the north side of a small isle, called Raine Islet: and the same vessel, in September, 1826, entered at 10 A.M. through an opening, in lat. 11° 41′ S., between Raine Islet and extensive reefs to the southward.

The foregoing Barrier Reef Passages, directly to the eastward of the Sir Charles Hardy Isles, have now become of great importance in the navigation to Australia, as several safe channels through the Barrier have lately been discovered, which are laid down on the chart of these passages, published by me in 1830, and subsequently corrected. Several of these openings are nearly contiguous to each other, there being three safe passages through the Barrier, between lat. 11° 53′ and 11° 57½′ S; and another safe channel, about half a mile wide, in lat. 12° 0′ S., was discovered 17th June, 1829, by Captain Robert Brown, through which he passed in the ship Lord Melville; and again, May 19th, 1835, in the ship New Grove. *Safe openings in the Barrier Reef.*

The following is an extract from his journal of the New Grove's late passage. Sailed from Van Diemen Land April 29th, 1835. At 5 P.M., May 13th, saw Kenn Reef bearing from N. by E. to N. N.W., distant 5 or 6 miles, consisting of sand-banks, with a rock at the N.W. part, about 30 feet above th sea. May 19th, saw the Barrier Reef;

laid by for the meridian observation, which gave lat. 12° 0′ S. as expected, which being that observed in our passage in the Lord Melville through the Barrier in 1829, bore away and entered it at 1 hour 30 minutes P.M., and at 4 P.M. anchored under the second sand-hill. At 6 A.M., May 20th, weighed, and steered W. N.W., and in proceeding to the northward of Cockburn Reef, passed between some patches of sunken rocks, with probably 14 or 16 feet water over them, and bearing about N. N.W. $\frac{1}{4}$ W. from the west end of the largest of the Sir Charles Hardy Islands, distant about $3\frac{1}{2}$ leagues.

Navigators in possession of the little chart of these passages will not be inclined to follow the circuitous and dangerous route by the Eastern Fields and Murray Islands into Torres Strait.

Openings in the Barrier Reefs.

In lat. 12° 5′ S., lon. 143° 48′ E., there is an opening in the Barrier Reefs, through which the Nimrod passed in 1822. Betwixt lat. 12° 10′ and 11° 35′ S., there are several openings in the Barrier, that will afford a passage to ships approaching within these parallels.

In lat. 12° 45′ S., lon. 143° 47′ E., there is another small opening in the Barrier, through which the Hibernia entered in 1810.

OUTER PASSAGES FROM PORT JACKSON, OR VAN DIEMEN LAND, TOWARDS INDIA AND CHINA.

PASSAGE TO THE EASTWARD OF NEW GUINEA AND THROUGH ST. GEORGE CHANNEL, WITH A BRIEF DESCRIPTION OF THE ISLANDS AND DANGERS NEAR THE ROUTE.

To sail from Port Jackson towards Hindoostan by the Pitt Passage.

THE BEST ROUTE from PORT JACKSON towards HINDOOSTAN, when neither the southern passage nor that by Torres Strait is adopted, seems to be round New Guinea, then through Pitt Passage and the Java Sea, or out through the Ombay Passage into the open sea, which route, like the other, ought only to be followed when the South-east Monsoon prevails to the southward of the equator.

THE ISLANDS AND DANGERS lying near this route, besides those already described, are the following.

Wells Reef.

WELLS REEF, in lat. 12° 20′ S., lon. 158° 45′ E. An extensive SHOAL, seen by the Pandora in 1791, and by the Indispensable in 1796, extending in a N.W. and S. E. direction from lat. 12° 8′ to 12° 46′ S., its northern extreme being in lon. 160° 30′ E. A SMALLER SHOAL to the eastward, in lat. 12° 26′ S., lon. 161° 42′ E.

Bellona and Rennell Islands.

To the northward of these dangers are BELLONA and RENNELL ISLANDS: the former is represented as a high round island, in lat. 11° 11′ S., lon. 159° 54′ E.; the latter a long island, lying N. W. and S. E., between the parallels of 11° 10′ and 11° 36′ S., its north point being about 20 miles to the eastward of the centre of Bellona Island.

Solomon Islands.

Next to the northward lies the extensive chain of the SOLOMON ISLANDS, stretching to the north-westward from Cape Turville or Oriental, the south point of San Christoval Island, in lat. 10° 57′ S., lon. 162° 17′ E., to the north point of Bouka Island, in lat. 5° 0′ S., lon. 154° 38′ E.

Louisiade.

To the westward, between the parallels of 12° and 9° S., is the LOUISIADE of

Bougainville and the D'Entrecasteaux Isles, stretching towards New Guinea. These are yet but little known. The eastern point of the Louisiade is called Cape Deliverance, and is in lat. 11° 18′ S., 153° 23′ E., 10 leagues N. E. of which lies a low island, covered with trees, called Rossel or Satisfaction Island: a reef stretches across from this island to the main land to the westward, and there appears to be a reef terminating in a small islet off its eastern end.

Pocklington Bank.

There is an extensive bank, called the Pocklington Bank, discovered in 1825, in lat. 10° 50′ S., and extending East and West from lon. 155° 12′ to 155° 40′ E.

Laughlan Islands.

LAUGHLAN ISLANDS were discovered by Captain David Laughlan, in the ship Mary, from Port Jackson, bound to Bengal, with the ship Clarkson in company. The following description, extracted from Captain Laughlan's journal, shews them to be nearly in the *direct route* of ships steering for St. George Channel, formed between New Britain and New Ireland.

August 16th, 1812, at 2 P.M. saw from the deck a group of islands ahead, distant about 7 miles; hauled to the wind N. by E. in order to clear the reefs, which appeared to surround six or seven islands extending E. S. E. and W. N. W. $3\frac{1}{2}$ or 4 leagues, and bearing from N. N. W. $\frac{1}{4}$ W. to N. W. by W. At $3\frac{3}{4}$ P.M. extremes of the land bore from West to S. W. $\frac{1}{4}$ W., distant 7 or 8 miles, appearing like two islands: saw several coco-nut trees on the western extremity, and a reef with high breakers appeared to encompass the islands. The S. E. extreme of these islands is in lat. 9° 20′ S., lon. 153° 45′ E. by chronometer from Port Jackson, or in lon. 153° 40′ E. measured back from Cape St. George.

The Laughlan Islands appear to be the eastern extreme of a chain of islands and reefs which, with occasional interruptions, extend in a W. by N. direction to New Guinea. A wide channel separates the chain from New Britain and New Ireland, which lie to the northward.

New Britain

NEW BRITAIN is the name given to the large islands which stretch between the parallels of 4° and $6\frac{1}{2}$° S. from near the N. E. point of New Guinea and the S. W. part of New Ireland, and having Dampier Strait to the westward, and St. George Channel to the eastward of them.

New Ireland.

NEW IRELAND, which forms the eastern side of St. George Channel, is a narrow island, upwards of 200 miles in length W. N. W. and E. S. E. St. George Channel is formed between its southern part and the east end of New Britain.

Cape St. George.

Cape St. George, in lat. 4° 45′ S., lon. 152° 40′ E., is the southern promontory of New Ireland, and as the current often sets to the northward and westward when near the southern coast of New Britain, it is prudent for ships bound through St. George Channel to keep well to the eastward in steering for the cape, and to round it pretty close.

Gower Harbour.

Gower Harbour, a little way within Cape St. George, is formed between the shore of New Ireland and Wallis Island, called Marteux by the French, having a small green island fronting the southern entrance. The depths are from 46 to 30 fathoms in this harbour or gut, which is about half a mile wide. There is also anchorage in Turtle Bay, on the north side of the west point of Wallis Island, in 28 or 30 fathoms, but the two coves opposite to the north point of this island are the most convenient places to moor and procure water; the easternmost, called English Cove, has a brook of fresh water that falls into it, and they lie close to each other. Wood may also be procured.

Carteret Harbour.

Carteret Harbour, about 2 leagues to the north-westward of Wallis Island, is not easily discerned, unless a ship keep near the shore, it being formed in a concavity of the coast; and Coco-nut Island, at the entrance, being low, is obscured by the adjoining high land of New Ireland.

Leigh Island is small, and lies near the south end of Coco-nut Island; betwixt the former and Booby Rock, fronting the southern mouth of the harbour, is the passage in, by the South Channel. The North Channel is formed between the western point of the harbour and the north-west end of Coco-nut Island, and both channels are narrow, although there is plenty of room inside: a ship may anchor in 25 or 30 fathoms, soft mud, close under the north side of Coco-nut Island, and be well sheltered. Wood is got on this island, and very good water conveniently, on the coast of New Ireland, to the northward of the anchorage; but this harbour affords no other refreshments.

The anchorage is in lat. 4° 48′ S., lon. 152° 34′ E.; variation 7° E. in 1780. The tide flows once in 24 hours, and rises about 6 feet.

Port Hunter.

Port Hunter is a small bay, formed at the N. W. part of Duke of York Island, where a ship may anchor in 20 or 25 fathoms, soft ground, within 1½ cables' length of the shore; but farther in, the bottom is not good. Fresh water is got on the east side the bay, where it issues out of the front of a high bank, close to the sea; and it should be filled from half ebb to half flood, for the tide rises about 6 feet, and flows up to the place from whence the water issues.

A ship touching here for water ought to cover the watering party by boats well armed, or she may moor near the shore for that purpose, because the island is inhabited, and the natives are of warlike appearance.* Coco-nuts, sugar-cane, plantains, yams, and other fruits, were seen on this island, also hogs and fowls. It is about 3 leagues in extent, moderately elevated, and the fair channel is to the eastward, betwixt it and the coast of New Ireland.

Fead Islands.

FEAD ISLANDS, lying to the eastward of New Ireland, and extending nearly N. W. and S. E., about 9 leagues, were seen Feb. 16th, 1826, by Captain Renneck, of the Lyra, southern whaler, belonging to Messrs. Enderby; they consist of an irregular chain of low isles and sand-banks, encircled by a reef, the northern extreme of which is in lat. 3° 9′ S., lon. 154° 22′ E. The southern part of the chain is separated from that to the northward by a gap or apparent passage, and this southern part, called Goodman Island, is in lat. 3° 27′ S., lon. 154° 45′ E.; but to the southward of this southern extremity of the chain there is a detached sand-bank and reef, in lat. 3° 33′ S., lon. 154° 37′ E. by chronometer. These islands abound with coco-nuts, and some of them are inhabited, as upon the beach of one of the islands about 100 natives were observed waving green boughs.

Goodman Island and Sand-bank.

Lyra Shoal.

LYRA SHOAL, also discovered by Captain Renneck, February 18th, 1826, appeared to be a narrow spit, extending N. E. and S.W., from about lat. 1° 48′ S. to 1° 59′ S.; and in the middle part, where the Lyra passed over, lon. 153° 28′ E. by chronometer, coral rocks were seen under the ship, and over these the depth was probably not more than 4 or 5 fathoms, but before the lead could be hove she got into deep water, clear of the shoal.

* The vessel in which Captain Hunter proceeded from Port Jackson to Batavia touched here for water, having missed Carteret Harbour. The natives were hostile, and made an attack on the watering party, who fired on them; they were kept at a distance afterwards, by firing a few shots into the wood at times.

On the coast of New Britain, westward of Duke of York Island, are the remarkable hills called Mother and Daughters, with a small, flat volcanic hill near them.

THE ADMIRALTY ISLANDS and the contiguous dangers form a large group, extending from about lat. 1° 50′ S. to 3° 10′ S., lon. 146° 0′ E. to about 148° 6′ E. The Friendship, bound from Port Jackson to Bengal, in 1800, with another ship in company, passed between the large southern island and others to the northward, and had 20 fathoms water in the passage. The Great Island is high, lying in the middle of the group, and most of the small isles which encircle it are fronted by shoals. Admiralty Islands.

There is anchorage opposite a village, on the west side the southern island; and about 12 leagues westward of this island, and South from the mountain on Great Admiralty Island, is a dangerous reef in lat. 2° 42′ S.

The Admiralty Islands and Reefs were seen May 19th, 1824, in the ship Sherburne, and the southernmost isle was found to be in lat. 2° 39′ S., lon. 146° 40′ E., or 6° 19′ W. from Cape St. George by chronometers. This island, and another small isle near it, appeared to be the eastern boundary of an extensive reef lying to the southward of the Admiralty Islands, and from the mast-head breakers were seen 8 or 9 miles westward of the small isles; but between the latter and the breakers the sea appeared smooth, although they may be connected, and in such case, the dangers will extend about 10 miles East and West, and 4 miles North and South: at the northern part of the breakers, straggling rocks were seen above water.

SHERBURNE SHOAL appears to be a new discovery, made 15th May, 1824, by Captain G. White, in the ship Sherburne, on his passage from Chili towards Bengal. An extensive range of breakers was first seen at 3 P.M., bearing from N.W. to N.N.E., distant 3 miles, with rocks above water in several places; steered S.W. 7 miles, in a thick squall with rain, and at 4 P.M. again saw the shoal bearing from N.W. by W. to N. N. E., distant rather more than a mile from the nearest part, which was a dry sand-bank 3 or 4 feet above the surface of the sea, and forming the S. E. part of the shoal. At 5 P.M. a small rock on the S. E. part of the shoal bore N. by W., distant $4\frac{1}{2}$ or 5 miles, no land visible from the mast-head although the weather was clear. The dry sand-bank is small, and this is the only part of the shoal above water, excepting the rocks, some of which appeared to be about 20 feet above the surface of the sea. When some high rocks on the northern extreme of the shoal bore North, and a large flat rock about N.W., the breakers were very high as far as could be seen to the northward, extending from N. E. by N. to N.W. by W., which latter bearing appeared to be the western extreme of the shoal. The extent of this shoal from East to West seemed to be 12 or 13 miles, and from North to South about 8 miles, the north-eastern and south-eastern parts bearing S.W. and N. E. from each other, having a deep bight between, into which the ship was running when the weather cleared up, and providentially exhibited the danger. This shoal is rendered particularly dangerous, by its situation being directly in the track of ships proceeding from St. George Channel towards the northern coast of New Guinea. No observation for latitude was obtained when near the shoal, but on the following day, the latitude by account differed only 6 miles from that by observation, which made the sand-bank, or south-eastern part of the shoal, in lat. 3° 15′ S., lon. 148° 16′ E., or 4° 43′ W. from Cape St. George by chronometers, which is thought to be nearly its true situation. Sherburne Shoal.

CIRCULAR REEF, to the westward of Sherburne Shoal, explored November 7th, Circular Reef.

1825, by Captain Renneck, in the Lyra, is in lat. 3° 18′ S., lon. 147° 40′ E., and about 3 or 4 miles in diameter, having deep water inside, with an opening, about a quarter of a mile wide, at the N. N.W. part: the reef on the outside is steep to.

Sydney Shoal.

SYDNEY SHOAL, to the westward of Circular Reef, was discovered by Captain Austin Forrest, bound from Port Jackson towards Bengal, in the ship Sydney. At 1 A.M. May 20th, 1806, she struck upon it, and soon bilged, it being then covered at high water; but some points of the rocks appeared above the surface at low water, and there were no soundings close to the shoal. The boats steered from it N. by E. ½ E. 58 miles, and the Admiralty Islands were then seen, bearing N. N. E., distant 3 or 4 leagues, by which, and other observations, this dangerous shoal was found to be in lat. 3° 20′ S., lon. 146° 50′ E.

Sailing directions.

A SHIP intending to proceed by THE ROUTE ROUND NEW GUINEA, may, from Van Diemen Land or Port Jackson, steer to the E. N. E. and N. E. until in about lon. 160° E., then to the northward, keeping nearly on that meridian with the South-east trade. A good look-out is neccssary, in the vicinity of islands or dangers lying near the track, and as undiscovered dangers probably exist, such good look-out ought never to be omitted.*

When lat. 23° S. is approached, be more particularly on your guard, for several dangerous reefs lie between lat. 23½° and 18° S., some of which have been lately discovered, and probably other unknown dangers exist in their neighbourhood, in that part of the ocean between New Caledonia and the opposite coast of New Holland.

Having got into lat. 13° or 14° S., a north-westerly course should be steered for the entrance of St. George Channel, formed betwixt New Ireland and New Britain, taking care to give a berth to Laughlan Islands, also to the western coast of Bougainville Island, and the shoals that front it to a considerable distance. The westernmost of these coral shoals are in lat. 6° 11′ S., lon. 154° 22′ E., but others lie to the south, and also to the northward, contiguous to Winchelsea, or the Bouka Island of the French, which is large, and its north-east extremity is situated in lat. 4° 58′ S., lon. 154° 40′ E., by Captain White's observations in the Sherburne, in 1824.

Bougainville Island.

Shoals, and Bouka Island.

Having cleared St. George Channel, steer a westerly course towards the north coast of New Guinea, leaving to the westward the Admiralty Isles, and the chain of isles extending thence to the westward.

If a ship be carried to the westward of the south entrance of St. George Channel by the current, she might pass round to the southward of New Britain, and proceed through the strait formed close to its western extremity, generally called Dampier Passage or Strait; but this track being little frequented, a good look-out is necessary, as there may be dangers, not yet discovered,† in the approach to this strait from the southward.

* The route here described, to the eastward of Cato Reef, Wreck Reef, or other dangers, is frequently pursued; but Captain Bristow is of opinion, that the best track from Port Jackson is to keep within a moderate distance of the coast as far as Sandy Cape, and pass to the westward of the above shoals, observing great caution when passing Frederick Reef and the adjacent dangers; and from Sandy Cape, to steer for Cape St. George, or for Cape Deliverance, if bound through Dampier Strait. He was only 13 days from Port Jackson to the coast of New Hanover, by the latter route.

† The ships in search of La Perouse went through this strait in June, 1793. Captain Bristow, employed in the southern fishery, passed also through it: he cruized near a month for whales, in May, off the Admiralty Islands and New Hanover; and although great numbers of whales were seen, the boat could seldom be lowered down, on account of a continuance of blowing weather.

Whether the route by St. George Channel or that through Dampier Strait be followed, you ought to sail within a moderate distance of the north coast of New Guinea, in order to avoid the easterly currents and light variable N.W. winds, which may be expected North of the equator. These north-easterly currents are liable to drift ships a great way off into the ocean, rendering it necessary, after getting into lon. 134° E., to keep near the coast of New Guinea, when bound into the Pitt Passage in the South-east Monsoon, or from March to September. Directions from New Britain to Pitt Passage, in the South-east Monsoon.

After passing betwixt Point Pigot and the N.W. end of New Guinea, through Dampier Strait, into the Pitt Passage, conform to the directions given in one of the former sections, for pursuing the route from China outside the Philippine Islands, and through the Pitt Passage.

When the North-west Monsoon prevails to the southward, and the North-east Monsoon to the northward of the equator, a ship bound to Hindoostan, ought not to steer along the coast of New Guinea to the westward, as recommended above; but in November, December, and January, she ought to proceed to the northward until in about lat. 5° N., where N. E. winds may be expected to run with to the westward. The route to the southward of Mindanao, through Baseelan Strait, and the Sooloo Sea, round the north ends of Banguey and Balambangan, into the China Sea, then through Malacca Strait, will in general be more speedy than any other, during the North-east Monsoon. Directions will be found for this route near the end of that section where the Molucca and Banda Islands are described, instructions being there given for sailing from Amboina towards Hindoostan. Northern track through the Sooloo Sea, in the North-east Monsoon.

PASSAGE TO THE EASTWARD OF THE SOLOMON ISLANDS.

DEPARTING FROM PORT JACKSON, or VAN DIEMEN LAND, ships bound to China, or to Hindoostan, if the southern passage be not adopted, and when the North-east Monsoon is prevailing in north latitude, will generally have steadier winds, by pursuing a route more easterly than that described above, through St. George Channel. There are two routes usually frequented; one is to the westward of New Caledonia, New Hebrides, and Santa Cruz, or Egmont Island, leaving to the westward the great chain called Solomon Islands: the other route is to the eastward of New Caledonia and New Hebrides, leaving the Friendly Islands to the eastward, the westernmost group of which is called the Feejee Islands. Eastern routes from Port Jackson, towards China or Hindoostan.

To proceed by the westernmost of these routes, a ship ought to steer E. N. Eastward after leaving Port Jackson, to benefit by steady winds off the coast; and having got into about lon. 160° E., a northerly course may be steered, taking care to give a proper berth to the reefs projecting a great way out from the N.W. end of New Caledonia. Route westward of New Caledonia.

As the wind blows sometimes from S. S.W. or S.W., contiguous to the western coast of New Caledonia, a ship can have no occasion to approach near it, except she be in want of fresh water; which necessary article may, in a *case of necessity*, be procured at Port St. Vincent.

If a ship intend to go into that port, she must steer to fall in with the Great Reef, well to the southward, and then run along the edge of it, to the entrance of the port.

NEW CALEDONIA, the southern extremity, in lat. 22° 30′ S., lon. 166° 50′ E., is low land, not visible from the southern part of the Great Reef that surrounds it; for New Caledonia.

the southernmost extreme of the reef is in lat. 23° S., lon. 166° 51′ E.; and the Isle of Pines lies to the eastward, in lat. 22° 42′ S., lon. 167° 34′ E.

Port St. Vincent.

Port St. Vincent, on the S.W. side of New Caledonia, is in lat. 22° 0′ S., lon. 165° 55$\frac{1}{4}$′ E., by mean of 25 sets of lunar observations, taken by Captain Kent, in H. M. Ship Buffalo, when he discovered it in 1803; of this port he gives the following description.

"This beautiful and extensive harbour is formed by islands, many of them of considerable size, and about 4 miles within the coral reef that extends along the whole S.W. coast of New Caledonia, excepting where it has a few breaks. It fronts the shore at the distance of from 4 to 8 miles, but stretches much farther from the north and south extremities of the land, which, in those parts, is not visible when close to the reef. This great reef consists of a steep wall to seaward, level with the water's edge, having no soundings with 150 fathoms line, within two ships' lengths of it in most places."

The passage through which a ship must enter between the S. E. and N.W. points of the reef, in going into Port St. Vincent, is three-quarters of a mile wide, having 51 fathoms in the centre; and the passage between the S. E. and N.W. Heads of the Port, on the Governor King and Colonel Paterson Islands, is a quarter of a mile wide, with 19 fathoms water in the centre.

Directions.

From the direction of the land, and being within the southern tropic, the wind must be generally at S. E., which is upon the beam, sailing *in* and *out* of this harbour; however, should the wind incline more easterly off the land, there can be no danger going in, for by passing within a cable's length of the S. E. point of the reef, and getting within it, you may anchor in 10 or 12 fathoms, muddy bottom, well sheltered, with the water perfectly smooth; indeed, from the reef to the two islands forming the entrance of the harbour, a distance of nearly 4 miles, you are as well sheltered as at Spithead. Within the two points of the reef, the channel widens to S. Eastward between the reef and the Governor King Island, having plenty of room to work in the largest ship as far as the heads of the harbour, if the winds do not over-blow.

Within the heads of the harbour, you may anchor in from 10 fathoms to any decreasing depth, secure from all winds and weather. The tide rises between 5 and 6 feet, high water at 8$\frac{1}{4}$ hours on full and change of moon. Variation 11° E.

In the passage between Robbin and Governor King Islands, on the south side of the Middle Ground, there is plenty of water for any ship; and S. E. of this passage, there is a number of islands, forming perhaps many harbours equal to Port St. Vincent. Between the Colonel Paterson and Round Island there is also a passage to the N.W., and a few islands in that direction; but this passage seems not to have depth sufficient for a large ship. It is to be observed, that all the islands mentioned are within the coral reef which extends along the S.W. side of New Caledonia; and there is probably no safe entrance through it, except that leading to Port St. Vincent.

The water procured on Robbin Island was not very good, but there is *probably* plenty in other places, the circumjacent land being generally very high; and judging from the chasms formed in some parts of it, torrents of rain must fall at some seasons of the year. The trees about the harbour are small, but in the valleys between the mountains they appeared large, and the canoes are made out of large trees.

The natives often visited the Buffalo's people, bringing with them spears, clubs, fishing-nets, fish, yams, and sugar canes, which they cultivate. The harbour abounds with fish, and on the reefs and shores great quantities of shell-fish were found. The islands

are high and rocky, but covered in many parts with fine grass; on some of them many human skulls and bones were seen.

New Caledonia is seldom more than 8 or 10 leagues in breadth, but the chain of mountains which forms the interior extends N.W. and S.E. about 80 leagues. The French ships in search of Mons. La Perouse made the N.W. extremity of this large island in lat. 19° 58′ S., lon. 163° 30′ E. of Greenwich, or rather the extremity of a chain of small islands projecting from it; but there are other detached small isles and reefs farther to the northward. One of these reefs is in about lat. 19° S., lon. 162° 52′ E.; and Moulin Island, in lat. 18° 31′ S., lon. 162° 52′ E., is small, low, and covered with trees, having a reef stretching from it to the westward. Another low woody island, in lat. 18° 3′ S., lon. 162° 51′ E., has a reef extending 3 leagues North from it, and this is the northernmost of the *known* reefs, in the vicinity of the northern extremity of New Caledonia. Queen Charlotte Foreland, the S.E. part of New Caledonia, is in lat. 22° 15′ S., lon. 167° 13′ E.; and Botany Isle is in lat. 22° 27′ S., lon. 167° 17′ E. Loyalty Islands form a large range to the eastward of New Caledonia, having a channel between them and the east coast, but little known. S.E. part.

A ship from Port Jackson, having passed to the westward of New Caledonia, and the dangers last mentioned, may steer to N.N. Eastward, until in about lon. 164° E., then northward on this meridian, which will carry her in the fair channel, betwixt Solomon Islands to the westward, and Santa Cruz Islands to the eastward. Cape Boscawen, the N.W. extreme of the Island Santa Cruz, is placed in lat. 10° 55′ S., lon. 165° 40′ E., but Captain Hogan made it 10 leagues more to the eastward. To sail from the N. Western part of New Caledonia to the southward. Cape Boscawen.

THE SOLOMON ISLANDS, already mentioned at p. 750, are part of that extensive chain, which, commencing to the northward of the New Hebrides, extends in a north-westerly direction, towards New Ireland, and thence along the north side of New Guinea. Solomon Islands.

Arsacides, called sometimes San Christoval, the South-easternmost of the Solomon Islands, has, near its eastern extremity, the two small islands of Deliverance, in lat. 10° 51′ S., lon. 162° 27′ E. In case of falling to the westward, there are several straits among these islands through which ships may pass. Indispensable Strait seems to be a wide and safe passage, the south entrance of which is in lat. 10° 15′ S., lon. 161° 15′ E. Pitt Strait, about 3° farther to the N.W., is rather intricate at the north part; being formed in that part, among a group of small islands, which occupies the space between the large Island Santa Isabel and another to the westward. Bougainville Strait is the next to the westward, in lat. 7° S., lon. 156° E.; and there is a wide strait in lon. 153° 30′ E., formed betwixt the S.E. part of New Ireland to the westward, and Bouka or Winchelsea Island and other groups to the eastward. Indispensable Strait. Bougainville Strait.

Having rounded the easternmost of Solomon Islands, the best track for a ship bound into the Pitt Passage, or towards the south end of Mindanao, is to pass to the northward of all the large Solomon Islands at a moderate distance, then steer to the westward for Winchelsea Island, and round its north end. From hence, she may steer West for Cape St. George, and proceed through St. George Channel; afterwards she ought to keep within a moderate distance of the north coast of New Guinea to Point Pigot, and pass into Pitt Passage by Dampier Strait, during the South-east Monsoon, as directed in the preceding part of this section. Or if bound towards the south end of Mindanao and Baseelan Strait, when the North-east Monsoon is prevailing in north latitude, after having got into lon. 140° to 136° E., and finding the winds become light, she should stand across the equator into lat. 5° or 6° N., where she will meet with the To sail from Solomon Islands towards the Pitt Passage, or towards the south end of Mindanao.

skirt of the North-east Monsoon to carry her to the westward, as stated already in the preceding part of this section.

Passage from Solomon Islands towards China.

Ships bound to China in the early part of the North-east Monsoon, after passing to the eastward of Solomon Islands, may steer about N. by W. and N. N. W., in order to pass through among the Carolina Islands between lon. 155° and 149° E., where large channels are formed by the different islands; but in this track a good look-out is indispensable, for several undiscovered isles and reefs *probably* exist. More particularly, caution is requisite in crossing the Carolinas, because the islands which form this chain are very little known; and although they are probably not so *numerous* as hitherto supposed, their real situations may be very different from that usually assigned to them.

When clear to the northward of the Carolina Islands, a course may be steered to pass near the south end of Guam, the southernmost of the Marian Islands, or more to the northward, through some of the channels at discretion, either on the south side of Tinian, or northward of Saypan. From hence, a direct course should be pursued, to pass into the China Sea, by one of the Bashee channels.

Ships bound to China late in the season, having passed the easternmost of the Solomon Islands after January, when the violence of the North-east Monsoon begins to abate, may steer from thence a direct course to the N.W., in order to pass between the Island Yap and Matelotas; or betwixt the latter and the Pellew Islands, as time and circumstances require. From hence, a course should be followed to give a proper berth to the N.E. end of Luconia; and the most convenient channel among the islands, between it and the south end of Formosa, may be adopted to pass through into the China Sea, according to the prevailing wind.

PASSAGE TO THE EASTWARD OF NEW CALEDONIA.

To sail from Port Jackson towards China, the Outer Passage.

OUTER PASSAGE, from PORT JACKSON, or VAN DIEMEN LAND, to China, is more circuitous than the routes described above, but it seems to have fewer dangers, with steadier winds than experienced westward of New Caledonia and New Hebrides; it may therefore be adopted by ships from Port Jackson, or those which come through Bass Strait, or round Van Diemen Land, early in the season; for as westerly currents are generally experienced in crossing the S. E. trade, which sometimes hangs far to the eastward, it is advisable, in a ship that sails indifferently, to give a wide berth to all the large islands, by keeping considerably to the eastward of them.

Norfolk Island.

To proceed by this route, a ship ought to steer to make NORFOLK ISLAND, or to pass near it to the eastward, there being no danger above a mile from the shore. Mount Pitt, the highest part of this island, is in lat. 29° 2′ S., lon. 168° 2′ E. Variation 11° E. in 1802. From Norfolk Island, a course may be steered to pass near MATTHEW ISLAND, or ROCK,* in lat. 22° 24′ S., about lon. 172° 15′ E., which may be seen 8 or 9 leagues. By keeping thus far to the eastward, the islands adjacent to New Caledonia and the New Hebrides will all be left to the westward, and the Feejee Islands to the eastward; but as some unknown isles or dangers may probably exist, a good look-out is indispensable in these seas, particularly during the night.

Matthew Rock.

Having passed the parallel of Matthew Rock, steer N. by W. to give a berth to the range of the NEW HEBRIDES, by keeping in lon. 172° to 171° E., as a westerly cur-

* This is called Hunter Island by Captain Fearn, who places it in lon. 171° 50′ E., and he discovered a high rock to the westward, in lat. 22° 21′ S., distant 14 leagues from the former; this he considered to be Matthew Rock, which has near it to the northward a flat rock, that may be seen about 5 leagues.

rent is often experienced near those islands. If a ship make Erronan, the easternmost island, which is in lat. 19° 39′ S., about lon. 170° 15′ E., and be unable to weather it, she may pass through the channel betwixt it and Tanna, which is wide and safe. From hence, a north course is proper till in lat. 13° S., to avoid Aurora Island, and others which form the northernmost of the New Hebrides, said to extend considerably to the northward of the situation assigned to them in the charts. If none of the New Hebrides have been seen, steer to get a sight of MITRE ISLAND, which is a barren rock, that may be seen 7 or 8 leagues, said to be in lat. 11° 49′ S., lon. 170° E., but the Neptune made it in lon. 170° 42′ E. by chronometers in 1804; and Captain White, of the Sherburne, in 1824, made it in 11° 55′ S., lon. 170° 7′ E., by good chronometers. Tucovia, in lat. 12° 16′ S., lon. 168° 42′ E., bearing *true* S. 77° W. from Mitre Island, distant 84 miles, appeared about 3 or 4 miles in extent N.W. and S. E., with a high peak at its N. E. end, the S.W. extremity low; this island is inhabited. Cherry Island lies W. N. W. 9 or 10 leagues from Mitre Island, and Barwell Island lies in a W. S. W. direction from it, 18 or 20 leagues distance. Cherry Island has a rock off its south end, which makes a near approach from southward dangerous in the night.

Erronan.

Mitre Island.

Tucovia.

Ships in want of water and refreshments may keep farther eastward, and touch at the Feejee, or Friendly Islands, in order to obtain the necessary supplies. Some refreshments may also be procured at the New Hebrides; but great caution is requisite in landing on any of those islands, most of them being inhabited by an intrepid race of men, who are easily provoked to hostility, and they have been successful in cutting off several vessels.*

Caution.

After passing Mitre Island, a northerly course is proper to cross the equator in lon. 168° to 160° E.; and as strong westerly currents often prevail from its vicinity, until several degrees to the northward, steer to pass through among the Carolinas in about lon. 163° E.: but if the equator has been crossed in lon. 160° to 162° E., the best track to pass through among those islands seems to be in lon. 156° to 155° E., which space is thought to be *nearly* clear of islands.

To sail northward across the equator.

When to the northward of the Carolina Islands, a westerly course should be followed to pass through the most convenient channel among the Marian or Ladrone Islands, or to the southward of Guam, as directed above. And from thence, a course should be pursued for some of the channels formed between Botel Tobago Xima and the islands North of Luconia.

NASSAU ISLAND, in lat. $11\frac{1}{2}°$ S., lon. $165\frac{1}{2}°$ W., said to have been discovered in March, 1835, by the Nassau Whaler, of New Bedford, is low, affording wood and water, but there is no appearance of inhabitants.

Nassau Island.

HYACINTH BANK, in lat. 25° 15′ S., lon. 159° 18′ E., was discovered June 8th, 1835, by H.M.S. Hyacinth; the boats sailed on this bank $2\frac{1}{2}$ miles N.N.W., in soundings of 40 to 32 fathoms the least water.

Hyacinth Bank.

To enter into a particular description of THE ISLANDS IN THIS PART OF THE PACIFIC OCEAN, would be impossible in a work of this kind, but the following are the islands or dangers which lie near the tracks of ships sailing from Port Jackson to China.

* Several ships, returning in ballast, from Port Jackson towards India, have proceeded to New Zealand with the view of cutting down pine spars, for masts, &c.; but great labour and difficulty occurred in getting them from the forests to the water, exclusive of the risk of the people being cut off by the natives, who have killed the crews of boats whilst employed on shore. These ferocious people have also assaulted several ships, and massacred their crews.

Sark Island.

SARK ISLAND, the southernmost of Queen Charlotte Islands, is high, and may be seen 12 or 13 leagues; its south end is placed in lat. 11° 37′ S., lon. 167° 2′ E., by Captain White's observations in 1824.

Steward Islands.

STEWARD ISLANDS are merely sand-banks covered with trees; the easternmost, about 3 or 4 miles in extent, is the largest of the group, and it is in lat. 8° 28′ S., lon. 163° 2′ E., by Captain White's observations.

Gower Island.

GOWER ISLAND is small and low, and is said to be in lat. 7° 53′ S., lon. 160° 55′ E., by the observations of the navigator last mentioned.

A shoal is said to lie 40 miles East of Rotumah, which island is in lat. 12° 30′ S., lon. 177° E.

Walpole Island.

WALPOLE ISLAND, in lat. 22° 39′ S., lon. 169° 16′ E., discovered by Captain Butler, in the ship of that name, in 1794, has since been seen by many ships. Durand Reef.

DURAND REEF is situated near it, in lat. 22° 6′ S., lon. 169° 2′ E.

Neilson Reef.

NEILSON REEF, in lat. 27° S., lon. 146° 17′ W., upon which the Lancaster is said to have struck, having only 12 feet water in some places.

Volcano Island.

VOLCANO ISLAND, in lat. 10° 39′ S., lon. 166° 12′ E., by observations in the Cornwallis and Perseus, seems to be placed considerably too far to the N. Westward in the charts; and the adjacent large island Santa Cruz appears to partake of the same error.

Hunter Islands.

HUNTER ISLANDS, by the observations of Captain Mortlock, of the ship Young William, who saw them in 1795, are in lat. 4° 48′ S., lon. 157° 0′ E. A high island, in lat. 0° 48′ S., lon. 170° 49′ E., was seen by the Ocean, in 1804.

Pleasant Island.

PLEASANT ISLAND, in lat. 0° 20′ S., lon. 167° 10′ E., by Captain Fearn's observations, who passed near it in 1798, is of considerable size, inhabited by a stout race of men, who have canoes of moderate dimensions; it may be seen 6 leagues, and reefs project from its north and south extremes.

Howland Island.

HOWLAND ISLAND is said to be in lat. 0° 43′ N., lon. 176° 47′ W.

Ascension Island.

ASCENSION ISLAND, in lat. 6° 48′ N., lon. 158° 25′ E., is said to be about 60 miles in circumference, high land, with a good harbour on the western side, abounding in fish and turtle, fresh water, yams, bread, fruit, and fowls, but no hogs. The inhabitants probably about 1,000 in number, were friendly to the vessel from Sydney, in which Mr. Horton James visited this island in 1833.

Enderby Islands.

ENDERBY ISLANDS, two in number, in lat. 7° 18′ N., lon. 149° 2′ E., were approached close, February 27th, 1826, by the ship Lyra, Captain Renneck, and the inhabitants came off in canoes with coco-nuts and some flying fish. When these islands were nearly in a transit line bearing E. S. E., distant from the nearest about 6 miles, saw coral rocks under the bottom, and had several casts of 7, 8, 10, and 12 fathoms water upon this coral bank.

Two islands, in lat. 6° 34′ N., lon. 142° 44′ E., were thought by Captain Renneck

to be a new discovery, but they are placed in Admiral Krusenstern's Atlas of the South Pacific Ocean, under the name of Kama. Kama.

JANE ISLAND, discovered October 11th, 1827, at 3 P.M., by Captain Magnus Johnson, of the ship Guildford, on his passage from New South Wales to China, is in lat. 7° 33′ N., lon. 155° 3′ E. by lunar observation. This island, one of the Carolina chain, appears to be a new discovery, and is dangerous to approach in thick weather, being very low, in extent about half a mile, and several coco-nut trees were discerned. When the island bore N. E. ½ N. 4 or 5 miles, at 5 P.M., the sea broke high upon a reef extending 5 miles in a southerly direction from the S. E. point of the island, and a chain of breakers stretched from the island E. S. Eastward, as far as could be perceived from the mast-head, shewing the danger to be great in an easterly direction from the island. From the N.W. point, the broken water did not appear to extend above a mile, and the S.W. side of the island seemed clear of danger. The following danger seems to be nearly in the same situation as Jane Island. Discovery of Jane Island.

DANGEROUS REEF, lately discovered, its N. E. extremity in lat. 7° 36′ N., lon. 155° 18′ E., from whence it extended in a S.W. direction beyond the perceptible view. It is situated about 14 miles in a W. S.W. direction from the Island Bordelaise, discovered in 1826. Reef in Pacific Ocean.

BROWN RANGE and PARRY ISLAND consist of a chain of reefs and low isles, which from Parry Island, in lat. 11° 21′ N., about lon. 162° 52′ E., extend about 12 leagues in a W. N.W. and N.W. direction to WEST DANGER ISLAND, or the westernmost isle of the chain, from whence the reef stretches 3 or 4 leagues northward, without affording any passage through the whole of this extent. Brown Range, &c.

FOURTEEN ISLANDS GROUP, in lat. 4° 30′ N., lon. 169° 30′ E., seen in the American barque Alliance, May 6th, 1831. The inhabitants appeared friendly, and spoke the Spanish language. Group of Isles.

The Ocean saw three of the Carolina Islands, and by lunar observations made MARGARET ISLAND in lat. 8° 52′ N., lon. 166° 15′ E., LYDEA ISLAND in lat. 9° 4′ N., lon. 165° 58′ E., and CATHERINE ISLAND in lat. 9° 14′ N., lon. 166° 2′ E. Margaret, Lydea, and Catherine Islands

The ship Providence, in 1811, made ARRECIFE ISLAND in lat. 9° 36′ N., lon. 161° 8′ E. by chronometer. Arrecife Island.

CORNWALLIS ISLES, in lat. 16° 53′ N., lon. 169° 31′ E., are two small isles, surrounded by a reef, discovered by H.M.S. Cornwallis, December 14th, 1807. Cornwallis Isles.

GASPAR RICO, in lat. 14° 30½′ N., lon. 168° 42′ E. by chronometers and lunar observations, are a group of five islands with extensive reefs, seen in 1796 and in 1807, by the Cornwallis. Gaspar Rico.

FARNHAM ISLAND, in lat. 14° 46′ N., lon. 169° 18′ E., seen by Captain Underwood, of the American brig Bolivar, in 1833, extends about 6 miles N.W. and E. S. E., may be seen about 5 miles from a ship's deck, and has a reef extending nearly 10 miles from its western extremity. Farnham Island.

Mac Askill Islands.

MAC ASKILL ISLANDS, discovered October 29th, 1809, by Captain Mac Askill, of the ship Lady Barlow, on his passage from Port Jackson towards China, appeared to be two islands covered with trees, extending about 3 leagues S. E. and N.W., and seemed to be bold to approach on the west side. By good observations, their centre was found to be in lat. 6° 12′ N., lon. 160° 53′ E.

The Lady Barlow passed over the spot assigned to the large islands Hogolew and Torris in most of the charts, and also over the assigned places of others of the Carolinas, without discerning any signs of land; from which, compared with the observations of other ships, it appears that the islands which form the Carolina Archipelago are not so numerous as represented, and that *in general* their geographical positions are not well determined.

Although several of the following islands, lately discovered, are out of the route of ships proceeding from Port Jackson towards China, yet it may be useful to state their positions, as some of them are in the track of ships which cross the Pacific Ocean from the west coast of America, or after rounding Cape Horn.

King George Reef.

KING GEORGE REEF, in lat. 19° 56′ S., lon. 167° 30′ W., discovered by Captain Beveridge, in the ship of that name, in March, 1819, is of an oval form, extending about 12 miles nearly North and South.

Onaseuse Island.

ONASEUSE, or HUNTER ISLAND, in lat. 15° 31′ S., lon. 176° 11′ E. by lunar observations, lying to the N.W. of the Feejee or Fidjee Islands, is high, of considerable size, and populous; it afforded hogs, yams, and tropical fruits, when Captain Hunter, of the Dona Carmelita, saw it in July, 1823, and had some intercourse with the natives, who were well armed, of warlike appearance.

Ellice Group.

THE ELLICE GROUP, consisting of about fourteen low islands and sand keys, was discovered May 17th, 1819, by Captain De Peyster, of the ship Rebecca, on his passage from Valparaiso towards Bengal. By many sets of lunar observations corresponding within 3 miles of the chronometers, he made the central island of the group in lat. 8° 29′ S., lon. 180° 54′ W.: they appeared to be uninhabited, with bushes on some of them, and the Rebecca was not more than thrice her own length from one of the islands when first discerned at 3 A.M.

De Peyster Islands.

THE DE PEYSTER ISLANDS are another group of about seventeen in number, discovered on the following morning after leaving the above-mentioned group, and their southern extremity was found to be in lat. 8° 5′ S., lon. 181° 43′ W. by lunar observations and chronometers; these are also small low islands, and seem to be inhabited, as a large fire was seen on one of them in the night.

Frindsbury Reef.

FRINDSBURY REEF, in lat. 5° S., lon. 159° 19′ E., on which the southern whaler of that name was wrecked in March, 1832, is a dangerous coral reef, with a heavy surf beating over it. Three men were lost in getting the two boats, which contained 32 survivors, clear of the wreck. Captain Duncan was in one of these boats, with part of the crew, but was never heard of after separating from the other boat, left in charge of the chief mate; this was on the 20th March. After suffering great hardships, the latter boat reached Carteret Harbour, on the 27th of that month, and the people saved in her lived with the natives till taken up by the Isabella, of London, May 15th, 1832.

REIRSON ISLAND, in lat. 10° 6′ S., lon. 160° 55′ W., and HUMPHREY ISLAND, in lat. 10° 30′ S., lon. 161° 2′ W., were discovered by the ship Good Hope, in October, 1822, and are both low, abounding with coco-nut trees. In passing close to the former, a number of inhabitants were seen, and the latter is probably inhabited likewise, it being to leeward of Reirson Island. Reirson and Humphrey Islands.

DAVID CLARK ISLAND, in lat. 17° 19′ S., lon. 138° 30′ W., was also seen, and thus named by the ship Good Hope, in 1822; this island appeared about 20 miles in circumference, and was low and dangerous; the more so, as it lies far to windward of all the known islands which form the group of the Dangerous Archipelago. David Clark Island.

NEDERLANDICH ISLAND, in lat. 7° 10′ S., lon. 177° 33¼′ E., discovered in July, 1825, by Captain Eeg, in the Pollux Dutch sloop of war, appeared to be fully peopled, and the natives are described to be a fierce and athletic race of men. Nederlandich Island.

ROXBURGH ISLAND, discovered and named by Captain White, of the Medway, March 5th, 1824, on his passage from the west coast of America, is high, and about 20 miles in extent East and West; it may be seen at a considerable distance. He made the body of the island in lat. 21° 36′ S., lon. 159° 40′ W., and about 160 miles W. by N. from the Island Mangeea. Roxburgh Island.

KARLSHOF ISLAND, in lat. 15° 27′ S., lon. 145° 24½′ W., was seen by Lieutenant Kotzebue, in 1824, and he discovered, and named the three following islands:—PREDPRIATIJE ISLAND, in lat. 15° 58¾′ S., lon. 140° 2½′ W.; BELLINGHAUSEN ISLAND, in lat. 15° 48′ S., lon. 154° 30′ W.; KORDAKEW ISLAND, in lat. 14° 32½′ S., lon. 168° 6′ W.; but the latter island had been previously seen by M. Freycinet: this, however, was not known to Lieut. Kotzebue. Four islands, seen by Lieut. Kotzebue.

THE SUWARROW ISLANDS, discovered by the Russian ship of this name, September 27th, 1814, are four uninhabited islands, extending from lat. 13° 6′ to 13° 15′ S., lon. 163° 23′ to 163° 31′ W. The Suwarrow Islands.

LISIANSKY ISLAND, in lat. 26° 2¾′ N., lon. 173° 42½′ W., is low, about a mile long, destitute of fresh water, with a coral reef extending around to the distance of 2 miles. Lisiansky Island.

KRUSENSTERN ROCK, in lat. 22° 15′ N., lon. 175° 37′ W., appeared to be a rock under water, as breakers were seen from the ship Neva, in 1804, and shoal water seemed to extend 2 miles from the breakers, which were only seen in one place, but the weather did not permit Captain Lisiansky to examine this supposed danger. Krusenstern Rock.

THE NIMROD GROUP, in the Southern Pacific Ocean, seen in the ship Nimrod, Captain Henry Eilbech, on her passage from Port Jackson to Rio Janeiro, round Cape Horn. These islands are placed by him in lat. 56½° S., lon. 158° 30′ W., and are stated to have been seen at a considerable distance; but numerous birds and amphibious animals, with a great quantity of marine vegetables, found in their neighbourhood, sufficiently indicated their existence. The Nimrod Group.

HOMEWARD PASSAGE FROM AUSTRALIA AND VAN DIEMEN LAND BY CAPE HORN AND MAGELLAN STRAIT.

Homeward Passage by Cape Horn.

SHIPS from Port Jackson or Van Diemen Land, bound to EUROPE in the SUMMER MONTHS, and perhaps at all seasons, may expect to make a quicker passage round Cape Horn than by any other route, for the prevalence of westerly winds in high southern latitudes is favourable for that passage. Captain Hunter left Port Jackson in H. M. Ship Sirius, October 2nd, 1788, stood to the Southward and S. Eastward until in lat. 50° S., and kept mostly betwixt this parallel and lat. 56° S., in running to the eastward. In lat. 57° S., lon. 76° W., they saw many ice islands, November 23rd; passed Tierra del Fuego, 26th, in sight of the land, and sailed N. Eastward, constantly among ice islands, until December 21st, when the last piece of ice was seen in lat. 44° S., lon. 35° W. Some of them were small, others 2 or 3 miles in circumference, and about 300 feet in perpendicular height. At this time, the sea was overspread with them from South Georgia to lat. 46° S., and they seemed to have been drifted from that island, or from Sandwich Land,* by southerly winds, and were probably separated from the land in the spring, or by a storm during the winter. Sailing among such numbers of ice islands would have been attended with considerable danger but for the almost uninterrupted daylight at this season in these high latitudes. After passing Cape Horn, the Sirius had mostly N. Easterly winds for 15 days; she nevertheless arrived in Table Bay, at the Cape of Good Hope, January 1st, 1789, after a passage of 91 days from Port Jackson.

Lieutenant Ball, in H. M. Ship Supply, sailed from Port Jackson, November 26th, 1791, kept in lat. 50° to 57° S., and passed in sight of Cape Horn, January 6th, 1792; after rounding the Cape and Staten Land southerly winds continued, with which she steered to the northward; and although N. E. winds were afterwards experienced, arrived at the island St. Catherina, on the coast of Brazil, February 1st, after a passage of only 67 days from Port Jackson. Although this ship was as far South as the Sirius, in rounding Tierra del Fuego, no ice islands were seen during the passage; this difference may be accounted for by the Supply passing it later in the season.

The Minstrel left Port Jackson, July 6th, 1813, steered to pass to the northward of New Zealand; but a heavy gale of wind, which suddenly changed from N. N. E. to West, drove her very close to the shore, a little southward of Cape Maria.† On the

* Or perhaps from South Shetland, at that time not known to navigators.

† Colombia Reef, seen by the ship of this name in 1828, on the coast of New Zealand, commences about 2 miles N. N. E. from Cape Maria Van Diemen, and extends from thence in a West and W. S. W. direction full 3 miles, having apparently deep water inside, between it and the cape.

Ships intending to touch at the Bay of Islands, New Zealand, may find the following remarks, given by Mr. H. Driver, useful.

The South Head of the Bay of Islands is known by a conspicuous Rocky Islet, elevated about 150 feet above the sea, perforated by an archway about 30 or 40 feet, through which the sea breaks. Between this islet and the High Head there is a rock like an ill-shaped bottle, and outside another, about 30 feet high, of conical form.

16th, after the gale moderated, she cleared this cape, and steered eastward, gradually increasing the latitude to 40°, 50°, and at last to 60°, when she approached Cape Horn; the prevailing winds were strong from W. N. W. to W. S. W., sometimes veering to North, N. E., S. E., and South, but these winds were of short duration. She passed Cape Horn August 29th, in lat. 57° 46′ S., distant 130 miles from it, with strong S.W. winds; afterwards passed about 120 miles to the eastward of the Falkland Islands, September 2nd, and made the coast of Brazil, near Rio Janeiro, September 16th.

Other ships, pursuing the route from Port Jackson round Cape Horn, have in general made favourable passages into the Atlantic Ocean; but as stormy weather and high seas may be expected at times in high southern latitudes, this route ought not to be chosen in a *leaky* or *crazy* ship; and those who pursue it ought particularly to keep a good look-out for ice islands, both to the westward and eastward of Cape Horn.

The ship Yare left Hobart Town June 9th, 1832, and arrived in the Thames October 15th, by the Cape Horn Passage.

The ship Henry left Hobart Town November 4th, 1832, and arrived in the Thames March 1st, 1833; she saw a considerable quantity of ice, but on the whole had a favourable passage.

The Wave left Hobart Town August 4th, 1832, and did not reach the English Channel till January 25th, 1833, having remained six days at Rio Janeiro, where she went to get supplies, and repair the damage sustained from boisterous weather. In lat. 53° S., lon. 130° W., August 29th, she was surrounded with icebergs, and was daily among ice till in lat. 60½° S., lon. 92½° W.; September 9th, constant N. N. E. gales drove her into lat. 61° S., and from lon. 107° to 74° W., she was kept between the parallels of 59° and 61½° S., by almost constant strong winds from N. N. W. to N. N. E. The last iceberg seen was in lat. 59° 22′ S., lon. 76° W., September 15th; for no ice was met with farther eastward in the neighbourhood of Cape Horn.

The Caroline left Hobart Town February 9th, 1834, and a fair wind with favourable weather continued seven weeks, nor was any ice seen until round Cape Horn. She arrived in the English Channel June 8th, and had not considerable delay been experienced by adverse winds in the proximity of the Falkland Islands, the passage might have been effected from Hobart Town to England in three months.

The Surrey left Port Jackson April 9th, 1830; had a southerly gale several days, with which she passed to the northward of New Zealand; then had northerly winds and fine weather for a considerable time. May 29th, in lat. 58½° S., lon. 118° 12′ W., a small piece of ice was seen, but none afterwards. Here the weather became cloudy, and for several days no observations were got, during which time a current of 30 leagues to the southward was experienced to the westward of Diego Ramirez. After rounding Cape Horn, had light northerly winds several days, with a N. Easterly current: arrived August 2nd in the Downs.

The ship John, August 7th, 1831, in lat. 53° S., lon. 130° W., had a narrow escape from an iceberg, at 4 A.M., when sailing with great rapidity; a heavy cloud was then perceived right ahead, through the surrounding haze, which was thought to be land. The chief mate, on the forecastle at this time, called out " keep her away," which was done instantly, and the ship grazed the S.W. point of an immense iceberg, several hun-

On the North, and about a mile from the South Head lies a rock a little above water, a resort of numerous birds, and having a white appearance from their excrements. The best anchorage is about 15 miles up from the Head, and there is no danger unseen. There is a large island in the centre of the bay, with a passage on each side. The best watering-place is on the south side, opposite the bay, where the houses of the missionaries are built.

dred feet high, the rebounding swell from which assisted to keep her off, while the broken ice considerably retarded her progress. At daylight, a great number of icebergs were discovered around, through which she sailed six days, lying to every night, until in lon. 118° W.

Icebergs are almost constantly found between lon. 130° and 110° W. during the winter season, probably drifted from a large extent of undiscovered land to the southward.*

Passage round Cape Horn to the westward.

The passage from Port Jackson and Van Diemen Land round Cape Horn is now frequently used by ships bound to England in the winter season; and since South Shetland and other lands have been discovered, and the trade opened on the western coasts of South America, many ships pass round that cape to the westward in the same season, without encountering much difficulty. The Southern Whalers, belonging to Messrs. Enderby, frequently pass round to the westward in winter; for although the days are short and the nights long, yet in this season the ice is consolidated to the southward, and ships are not liable to encounter loose ice, if they do not go far South near the fields. By keeping within a moderate distance of the land, the winds are sometimes variable, enabling ships to get quicker round to the westward than if they went far South, where the westerly gales blow more constantly than near the land.

During the early part of the summer, from October to December, many large pieces of ice may be broken from the solid mass, or from the southern lands, and then drifted to the northward, in the proximity of Tierra del Fuego: but late in the summer, from January to March, the accumulation of heat in the ocean and atmosphere *may be expected* to dissolve all loose pieces of ice before they are drifted far from the original mass, thereby leaving the sea clear to the northward near Cape Horn.

One of H. M. Ships lately passing round the cape to the westward, in April and May, experienced much blowing weather from the westward, with hail storms; her rigging being at times frozen.

Captain Weddell,† relative to the passage to the westward round Cape Horn, observes as follows:—" In the beginning of November, the winds draw from the northward, and continue to be frequent till about the middle of February, when they shift to the S.W. quarter: during this period the westerly winds are not lasting, hence the passage may be easily effected. From about February 20th to the middle of May, the winds usually blow with violence between S.W. and N.W., and no ship, during this interval, need expect to make a passage round the cape, unless in excellent condition. From the middle of May to the end of June, the winds prevail from the eastward with fine weather; and during these six weeks a ship may round the cape in sight of Diego Ramirez. From the beginning of July to the beginning of November, the winds again prevail between S. W. and N.W., but in August and September are more particularly tempestuous. In March, August, and September, when violent gales prevail, if a ship *happen* to be rounding the cape, it is, by some navigators, considered best to keep to the southward, in lat. 59° to 60° S., where the sea is less turbulent, and the winds more equal. In doing this, care must be taken not to approach too near

South Orkney, South Shetland, and Palmer Land.

South Orkney Islands, lying between lat. 60° 20′ and 61° S., and lon. 45° to 46° 30′ W. DIRK GHERRITZ LAND, now called South‡ Shetland, between lat. 61° and 63° S.,

* Voyage Round the World, by T. B. Wilson, Surgeon, R. N.

† Navigators intending to pass round Cape Horn should possess themselves of Captain Weddell's Voyage towards the South Pole, published in 1825; it will be found a valuable acquisition in these seas.

‡ Dirk Gherritz was commander of the Good News yacht, one of the five ships from Rotterdam, which rounded Cape Horn in 1659, and being separated by a storm from his consorts, he saw this southern land; it therefore ought to bear his name, as he was the first person known to have discovered it.

must be avoided; it extends in a W. S. Westerly direction from lon. 54° W. to 63° W., having a wide channel between this great chain of islands and Trinity or Palmer Land, more to the southward.

GRAHAM LAND was discovered in 1832, by Captain Biscoe, of the brig Tula, belonging to Messrs. Enderby; it lies beyond the Antarctic circle, to the S.W. of South Shetland. The body or central part of the northern coast, in lat. 69° S., lon. 68° W., is very high, coated with snow; but the lower parts where the boats landed were free from snow and ice, and the black rocky cliffs felt very warm in the rays of the sun. Some of these cliffs appeared to be about 2,000 feet perpendicular, facing the sea; and the height of the interior probably between 5,000 and 6,000 feet, forming a pretty regular outline, unlike the rugged peaks which distinguish the aspect of South Shetland. Graham Land extends from S.W. in a N. Easterly direction, apparently terminating near, or in Trinity, or Palmer Land. Detached from the land here described is an island, called Adelaide Island, which was closely approached; it is in lat. 67° S., lon. 68° W., of small extent, but elevated several thousand feet above the sea, and terminating in a beautiful conical peak; this island was nearly encased with a covering of consolidated ice and snow, intersected from the summit to the base of the island or mountain by deep chasms, by which it would seem that icebergs are formed upon, and then broken off from this island. No sea elephants or seals were seen here, at Graham Land, or Enderby Land, nor were any beaches perceived where these animals could land; in most places the sea-face was composed of high steep cliffs, or rugged rocks, destitute of gravel or sand. Graham Land and Adelaide Island.

ALEXANDER ISLAND, in about lat. 69° 30′ S., lon. 75° W.; and PETER ISLAND, in about lat. 69° 30′ S., lon. 90° W., discovered by Captain Bellinghausen, on his exploring voyage, are high, but were not approached nearer than 8 or 10 leagues, on account of the surrounding ice. Alexander and Peter Islands.

Captain Foster, of H. M. S. Chanticleer, during his experimental voyage in the southern hemisphere, observed, that in March the winds between S.W. and N.W. in the vicinity of Cape Horn exceeded the aggregate of those from all other quarters in the ratio of 4 to 1; whilst in the summer months, during an equal interval, these winds exceeded all others in the ratio of 2 to 1 only—proving, independently of all other circumstances, that the summer months are preferable for proceeding to the westward round this promontory, when N. Easterly winds may be expected about the parallel of 60° S., which probably extend to a high southern latitude during great part of the summer, as N. E. winds were found to prevail at South Shetland during the months of January and February, 1829, when the Chanticleer remained at Pendulum Cove, Deception Island, lat. 62° 56¼′ S., lon. 60° 32′ W. Cape Horn Winds. Pendulum Cove.

The current early in January, between lat. 56° and 63° S., lon. 63° to 67° W., usually sets E. S. E. and S. E. at a mean daily rate of 8 to 12 miles. Currents.

The tides run strong between Cape Horn and Staten Island, the flood apparently from S. Westward at the rate of 3 miles per hour or upwards at times. This renders the navigation into the coves or harbours of Staten Island intricate, except at slack tide, as the stream sweeps across the mouths of these inlets with great velocity, forming eddies, while variable gusts of wind blow from the rugged high cliffs by which they are formed. Tides.

Along the northern side of Staten Island the flood comes from eastward, and runs

southward through the Strait of Le Maire, varying in velocity from 5 to 7 or 8 miles per hour.

Harbours. The harbours of Staten Island, with one exception, are on its northern side; they are named St. John Harbour, Port Cook, New Year Harbour, Basil Hall Harbour, Port Parry, Port Hoppner, and Port Vancouver.

Magellan Strait. MAGELLAN, or MAGALHAENS STRAIT, having usually been considered a tedious and precarious navigation to adopt in proceeding westward, particularly during the winter months, the outer passage round Tierra del Fuego and Cape Horn has generally been preferred; yet it appears that the passage through this strait, even in these months, may sometimes be pursued with advantage. H. M. ketch Basilisk, Lieutenant M'Donald, in company with H. M. Frigate North Star, sailed from Berkley Sound, Falkland Islands, July 28th, 1835, and having separated in thick rainy weather during that night, the Basilisk steered for Magalhaens Strait, and on August 1st passed Cape Virgins, into the entrance of the strait. On the morning of August 10th, she passed Cape Pillar, and entered the Pacific Ocean, being just nine days from passing Cape Virgins, including one day at anchor in Port Famine. Two-thirds of the distance was performed against strong S.W. winds from Cape Virgins to Cape Quod, and the other third with a fair wind from East, with fine weather. Lieutenant M'Donald observes as follows: " Had we been exposed to floating ice outside the heavy sea and strong S.W. winds, we might have been obliged to stand southward, to perhaps lat. 62° S., and would, on the wind coming fair, be about 800 miles from Cape Pillar; whereas, in the present instance, this distance was gained. The North Star arrived at Valparaiso August 25th, or six days later than the Basilisk, having experienced strong S.W. gales from the 1st to the 10th of August, in lat. 55° to 59° S., with the thermometer from 30° to 14°, the cold being so intense, that one man died while looking out, and two were with difficulty re-animated. During the same period, the Basilisk in the strait experienced similar strong S.W. winds, but the water was comparatively smooth, and the people had proper rest in bed, while the vessel usually anchored in the night; the thermometer ranging from 40° to 29°, the medium 35°. From the Falkland Islands, the North Star was 28 days, and the Basilisk 22, to Valparaiso; shewing, in this instance, that the strait was the preferable route."

Lieutenant M'Donald observes, that the charts constructed from the survey of Captain King, and his directions for Magellan Strait, are such excellent guides for this navigation, that no accident is likely to happen, unless from negligence.

A quick passage from Chili to Bengal. Some ships have made a speedy passage from South America across the Pacific Ocean to India: Captain Peircy sailed from Valparaiso in January, 1814, and after crossing that ocean, entered the China Sea by the Bashee Passage, then proceeded through Malacca Strait, and arrived in Bengal River in two months and twenty-six days from Valparaiso.

The ships Good Hope, Stanmore, and Sherburne, all sailed from Bengal River between the 15th of May and the 22nd of June, 1823, and their passages from thence to Valparaiso were respectively 135 days, 114 days, and 115 days, having all three proceeded direct to the southward from Bengal Bay till in lat. 48° to 53° S., in which parallels they mostly ran down their easting, and experienced very stormy weather. The Stanmore, on a former voyage, was 100 days by the same route, and at another time 135 days by a more northerly track through Bass Strait, and to the northward of New Zealand, on which passage she had very severe weather near the south coast of

Australia, where she lost several of her sails, and her crew suffered greatly by fatigue. Captain G. White, of the Sherburne, recommends the southern route as far preferable to that by the south coast of Australia and Bass Strait.

The Sherburne, on February 27th, 1824, sailed from Copiapo for Calcutta, and proceeded through the South Pacific Ocean, between the Marquets and Society Islands, saw the easternmost of the Navigator Islands, and had frequent light variable winds, where a S. E. trade was expected. She went through St. George Channel, afterwards along the north coast of New Guinea, through the Gillolo and Ombay Passages, and on the 15th June, passed the south point of Sandalwood Island into the Indian Ocean.

PASSAGE FROM PORT JACKSON THROUGH BASS STRAIT, OR ROUND VAN DIEMEN LAND.

SHIPS bound from PORT JACKSON to Europe or to Hindoostan may adopt the southern passage, through Bass Strait, or round Van Diemen Land, if they depart between the beginning of September and the end of March. In the months of January, February, and March, S. Easterly winds frequently prevail about Van Diemen Land, and near the south coast of Australia, enabling ships to make considerable progress to the westward: they ought, however, to preserve a *considerable distance* from the south coast, in order to benefit by every change of wind in their favour, and to avoid being driven too near the land by southerly or south-westerly gales, which are likely to happen at times.* Southern Passage from Port Jackson.

The strong westerly gales which prevail here in winter render the southern passage difficult; yet it has sometimes been performed, even in that season, by ships which were in good condition and sailed well.

The ships Guildford and Batavia left Port Jackson early in June, 1817, intending to proceed by the Southern Passage along the south coast of Australia; but the former ship was unable to beat round, and returned to Port Jackson, to refit her damaged rigging and sails. The Batavia effected her passage, but suffered much from the severity of the weather, which rendered an extensive repair necessary on her arrival at Calcutta.

Captain P. P. King, R. N., after having completed his surveys of the Australian coasts, left Port Jackson, September 25th, 1822, in the surveying brig Bathurst, with

* Captain Middleton, however, is of opinion that the westerly winds are not so strong or so constant near the south coast of Australia as they have been experienced in the winter months at a great distance from the land. While he lay in King George Sound, a colonial brig arrived in June from Hobart Town in 19 days; in which month also an open whale boat, employed sealing along the coast, arrived from the eastward; and in July, a small vessel, about 20 or 30 tons burthen, arrived in 39 days from Launceston, which was thought to have touched at Kangaroo Island, and thereby prolonged her passage. Captain Middleton sailed from King George Sound, August 12th, in the ship James Pattison, rounded Cape Leeuwin, and reached Swan River a week after his departure from the former place.

the intention of proceeding northward through Torres Strait; but a hard gale set in from the northward, which induced him to bear away, in order to proceed round Van Diemen Land to the westward if the wind permitted; or, otherwise, by doubling the south end of New Zealand, to make the eastern passage round Cape Horn.

Having reached the S. E. end of Van Diemen Land October 6th, with a brisk N. E. wind, he proceeded along its southern coast, and had a succession of heavy westerly gales, with much damp weather, till November 8th, when he made Bald Island, stood into King George Sound, and anchored off the sandy bay within Seal Island, to repair the rigging and get a supply of wood and water. The vessel was afterwards moved to a better sheltered anchorage off the Watering Bay, and on December 1st, after two attempts, she succeeded in getting out of the sound into the open sea, and reached Simons Bay, Cape of Good Hope, January 14th, without having encountered a gale of wind after leaving King George Sound.

The ship Alexander, Captain Norman, left Port Jackson in November or December, bound to Bombay, and got easily to the westward by the southern passage.

The ship Lady Barlow, Captain M'Askill, came through Bass Strait in January, when bound from Port Jackson to London, 1806, and proceeded to the westward with variable winds, frequently at East and S. E. In lat. 28° S., they got to the S. E. trade wind, and Captain M'Askill thinks the passage from Port Jackson to Bengal would have been performed in two months, had he been bound there.

A Whaler proceeded some time since through Bass Strait, and beat to the westward in June, but she experienced much blowing weather. Captain Lamb, in the Baring, from Port Jackson, bound to Bengal, passed to the westward through Bass Strait in two days, early in November, 1815; and with the winds he previously experienced, there would have been no difficulty in getting to the westward through the strait and round Cape Leeuwin in August. The Guildford left Port Jackson March 30th, 1812, passed round Van Diemen Land, went as far as lat. 48° S., where with N. E., East, and S. E. winds, she speedily got to the westward, entered into the South-east trade in lat. $26\frac{1}{2}$° S., and arrived May 31st in the River Hoogly, after a passage of two months from Port Jackson.

Ships which pass far South of Van Diemen Land, or New Zealand, ought to keep a good look-out for undiscovered islands or dangers which may exist in that part of the ocean. Those already known are, MACQUARIE ISLAND, in lat. 54° 42′ S., lon. 159° 45′ E., which is of considerable extent, lying North and South, having, about 7 or 8 leagues N. N. Eastward of its north extreme, some rocky islets called the Judge and Judge's Clerk. About the same distance southward of its south extreme lie other rocks, called the Bishop and Clerk, in about lat. 55° 15′ S. CAMPBELL ISLAND, in lat. 52° 32′ S., lon. 169° 30′ E., is small, and was discovered by Captain Walker, employed in the seal fishery by Mr. Campbell, then residing at Port Jackson; Macquarie Island was also discovered by the same navigator.

Macquarie Island.

Campbell Island.

Lord Auckland Islands.

LORD AUCKLAND ISLANDS, discovered by Captain Bristow, in the Sarah, in 1806, extend North and South about 6 leagues, their centre being in about lat. 50° 41′ S., and the north point of Enderby Island in lat. 50° 30′ S., lon. 166° 25′ E.* The large island has a harbour on the east side, called SARAH'S BOSOM, which is formed and secured from the sea by Green Island, and some reefs at the entrance bounding

* M. D'Urville places these islands in lon. 166° 15′ E. of Greenwich.

it on the outside. Several islets or rocks lie contiguous to the large island, of which Adam Isle is at its southern extremity, and Bristow Rock a few miles northward of its N. E. point. The Snares, in lat. 48° 10′ S., are two small isles, nearly on the meridian of the Lord Auckland Islands, about 20 leagues to the S. S. W. of the southern extremity of New Zealand, and there are other islands and dangers nearer to the latter. Farther to the eastward is Antipodes Island, in lat. 49° 35′ S., lon. 179° 30′ E.; it is small. Bounty Islands lie in lat. 47° 32′ S., lon. 179° 2′ E.; and in lat. 44° 36′ S., lon. 184° 33½′ E., a small group of islands was discovered by H. M. Ship Cornwallis, May 16th, 1807, thought to lie contiguous to Chatham Island. Snares.

THE PEARL AND HERMES REEF, in lat. 27° 46′ N., about lon. 176° W., is said to be a great reef, not previously known, until the Pearl and Hermes whale ships were wrecked on it. A great bank of soundings is said to have been discovered by a southern whaler, in lat. 30° 30′ N., lon. 177° 30′ E. Pearl and Hermes Reef.

The following islands and dangers in the Pacific Ocean were seen by American navigators. In 1830-1, Captain Meek, of the schooner Chinchilla, fell in with small islands in the following situations:—lat. 18° S., lon. 161° 45′ W.; lat. 6° 41′ S., lon. 166° 10′ W.; lat. 8° 40′ S., lon. 159° 50′ W.; lat. 9° 57′ S., lon. 148° 30′ W.; lat. 5° 30′ N., lon. 159° 20′ W.; lat. 13° 5′ N., lon. 168° 21′ W. Also an island, in lat. 4° 48′ S., lon. 178° 40′ W., about 15 or 20 leagues in circumference, having on the N.W. side an opening into a large lagoon, where a small vessel may enter. An island, in lat. 3° 30′ S., lon. 172° 50′ E., affording plenty of firewood and coco-nuts, but no water except in the rainy season on the N.W. part of the island. There is an entrance to a lagoon and good landing at the left hand end of the beach. An island, in lat. 0° 25′ N., lon. 170° W., has a good harbour, with regular depths from 10 to 4 fathoms, over a bottom of sand and coral, the entrance to which is three-quarters of a mile wide between two reefs. Good fresh water of any quantity may be got by sinking one or two casks at the head of the beach, a little above high-water mark. Firewood, coco-nuts, and fish, may also be obtained.

Captain David, in command of the American barque Nelson, fell in with a sand-bank in lat. 19° 21′ S., lon. 151° 2′ E., extending S. E. and N.W. about 4 or 5 leagues, and fronted on the east side by a reef of rocks about 13 feet above low water.

HOMEWARD PASSAGE FROM INDIA BY THE CAPE OF GOOD HOPE.

FROM INDIA, ROUND THE CAPE OF GOOD HOPE, TO ST. HELENA.

SHIPS from CHINA, which pass out into the Indian Ocean by any of the straits East of Java, or by the Strait of Sunda, ought to endeavour to get speedily into the strength of the South-east Trade, in order to run to the westward with steady winds. In lat. 14° or 15° S., the trade winds will usually be found steady, increasing in To sail from the Eastern Straits through the South-east Trade.

strength as they proceed south-westward, or until in lat. 18° or 20° S. : here it often blows with more force than in a lower latitude, but in March and April the trade wind is liable to obstructions, and sometimes fails about the southern tropic, in these months.

Storms. In Volume First of this work, it has been observed, that in the neighbourhood of the Islands of Mauritius and Bourbon, storms may happen from November to May, but hurricanes are more likely to be experienced in March or April. These hurricanes blow with irresistible fury near the islands of Roderigue, Mauritius, and Bourbon; generally with the greatest violence at the last-named island, and between it and the coast of Madagascar. Experience has shewn that these hurricanes sometimes extend from the southern tropic to lat. 8° or 9° S., and from the coast of Madagascar to about lon. 90° E., or even to lon. 100° E., but they are more generally met with between lat. 13° and 24° S., and within 5° or 6° of the islands mentioned above. Nevertheless, storms have at times been encountered far eastward, to the southward of Java and Sandalwood Island, when the Westerly Monsoon blows in those seas. January 8th, 1812, the Abercromby, a new ship of 1,200 tons, belonging to Bombay, when to the southward of Sandalwood Island, in lat. 14° S., lon. 115° E., was dismasted, and nearly foundered, in a tempest which came on at North, then veered to E. S. E. and South, and suddenly round to N.W.

January 3rd, 1827, at noon, in lat. $13\frac{1}{2}$° S., lon. 100° E., the Company's ship Macqueen, homeward bound from China, after observing the barometer fall considerably, experienced a gale from the northward with a high sea; the wind soon veered to South and West, from which quarters it blew with great fury, laying the ship's lee gunwale under water. Two of the boats and the hencoops were washed away, the quarter galleries stove in, and partly washed away, with the hammock nettings. The jib-boom, dolphin-striker, fore-topmast, topsail yard, and maintop-gallant-mast, were broken, and the ship appeared like a wreck; at 6 P.M. the barometer began to rise, and at midnight the tempest abated.

A proportional abatement of the violence of these hurricanes is, however, usually found, according as the distance is increased eastward of the Islands Roderigue, Mauritius, and Bourbon; for ships near these islands have frequently suffered by tempests, when others, farther East at the same time, have experienced no stormy weather. It is therefore advisable for ships homeward bound to keep well to the eastward in crossing the South-east Trade, and to round the islands at a great distance, when it can be done with propriety; more particularly, late in February, March, and April, when hurricanes are very likely to happen.

These hurricanes generally commence from the northward, and after blowing violently some time, they shift in an instant to the opposite quarter, and blow with equal fury, producing a very high and turbulent sea. Navigators should, therefore, be prepared to encounter stormy weather, when crossing the South-east Trade. The gun-deck ports, hawse holes, &c., ought to be strongly barricaded before night, when there is the least appearance of a change of weather, and if the wind veer northward and threaten to blow, a ship ought to be brought speedily under low snug sail; for there would be great danger of foundering, were she to be taken a-back by one of those sudden gusts, with square sails set, particularly if any of her gun-deck ports should burst open.*

* The unfortunate loss of H. M. S. Blenheim and Java and seven of the Company's ships, in the short period of two years, are melancholy proofs of the necessity of caution in navigating this part of the Indian Ocean.

SHIPS from MALACCA STRAIT or BENGAL, bound to the Cape of Good Hope, may cross the equator in about lon. 87° to 90° E.; those which come out of Malacca Strait ought to steer a considerable distance W. S.W. before they haul to the southward, in order to avoid baffling light winds, which generally prevail near the islands that front the west coast of Sumatra. If light winds are experienced about the equator, every effort should be made to reach the South-east Trade, by standing on the tack that will give most southing; and having got the steady trade wind, a course ought to be pursued to pass well to the eastward of Roderigue, as before recommended, according to the season of the year.

From Bengal or Malacca Strait, through the South-east Trade.

SHIPS from MADRAS and CEYLON, and those from the Malabar coast, which do not adopt the western route by the Mozambique Channel, generally proceed by the eastern route, or Outer Passage. But the Island Ceylon, from whence these ships often take a departure, being considerably to leeward in the North-east Monsoon, they are consequently unable to cross the equator so far to the eastward as ships from Bengal, and are sometimes carried near Roderigue by the South-east Trade. Those from the Malabar Coast should steer for the south-west part of Ceylon, and along that island to Dondre Head; from thence, they should stand off to the south-eastward with the North-east Monsoon, keeping a little from the wind, to make good way through the water; and they ought to cross the equator to the eastward of lon. 84° or 85° E., if practicable, in order to give a proper berth to Roderigue and the adjacent islands.

From Madras, Ceylon, and the Malabar coast, through the South-east Trade.

From April to November, when a storm seldom happens, these islands may be rounded at any convenient distance from 30 to 50 leagues; but in the other season, it seems prudent, when practicable, to pass them at a greater distance, viz. about 70, 80, or 85 leagues.

From whatever part of India ships have come, after getting to the southward of the islands of Mauritius and Bourbon, a course should be steered to give a berth of 30 or 25 leagues at least to the south end of Madagascar; but it seems advisable to pass it at a greater distance than 25 leagues, if the weather is any way unsettled.

From the South-east Trade to the coast of Africa about Algoa Bay.

Having passed the southern part of Madagascar in about lat. 27° S., a *true* W.S. West course, or about West and W. ¼ N. by compass, will carry a ship directly towards the land about Algoa Bay. It is prudent to approach the coast hereabout, to prevent being driven off to the southward, out of the stream of the current: and when the winds are contrary, it is advisable to get near the land about Natal, or between it and Algoa Bay, without loss of time, in order to benefit by the strong south-westerly current that generally sets along the coast to Cape Agulhas; but in passing Cape Padron and Bird Islands in the night, it is prudent to keep at least 7 or 8 leagues off the coast, to give a berth to the Doddington Rock.

SHIPS bound from BOMBAY or the MALABAR COAST to Europe, in *former times*, frequently adopted the MIDDLE PASSAGE, formed by the Chagos Archipelago to the eastward, and the Seychelle Islands and those of the Madagascar Archipelago to the westward. It has been stated in Volume First, that the London proceeded by this route in 1796; but as December and January appear to be the only two months favourable for it, when the North-west Monsoon often prevails from the equator to the Madagascar Archipelago, and as a ship in these months may be liable to encounter a storm near the islands or shoals, the *Outer Passage* ought always to be preferred, where there is plenty of sea-room, and less risk from stormy weather.

To return from Bombay by the Middle Passage.

To return from the Red Sea, the Gulf of Persia, or from Bombay, by the Mozambique Channel.

SHIPS bound from the RED SEA, or GULF OF PERSIA, towards the Cape of Good Hope, *in the strength* of the Northerly Monsoon, should proceed through the INNER PASSAGE, or Mozambique Channel. Ships from Bombay and the northern parts of the Malabar Coast, may also adopt this passage during the strength of the monsoon, in December and January, when northerly winds may be expected to carry them well into, or nearly through the Mozambique Channel. This route ought not, however, to be chosen either too early or too late in the season, although it is more direct from Bombay than any other, because southerly winds prevail greatly in the Mozambique Channel, in October and November, and after February; and even in this month, southerly winds are often experienced there. A strong current, which generally sets along the coast of Africa to the southward, has enabled some ships to work through this channel in March and April, but it ought not to be attempted so late in the season, for great delay and uncertainty will be occasioned thereby; and as storms are sometimes experienced about the southern part of the Mozambique Channel, even in January and February, many navigators gave the preference to the Outer Passage, eastward of Roderigue, and all the other islands in the western part of the Indian Ocean, to which the preceding directions are applicable.

Directions for the Mozambique Channel.

A ship departing from Bombay in November or December, intending to proceed by the Inner Passage, should steer to fall in with the island Comoro, giving a proper berth to the Seychelle Islands, and to those that form the north-western part of the Madagascar Archipelago. She may pass to the westward of Comoro, or through any of the channels between the Comoro Islands, as circumstances require. From hence, a direct course through the middle of the Mozambique Channel may be adopted, with a steady northerly wind; but when it is light, or southerly, she ought to keep within a reasonable distance of the African coast, where a strong current will be found setting to the southward in her favour: and it may be prudent to pass to the westward of John de Nova, the Europa Rocks, and Bassas de India, whether the wind be from northward or southward. The current generally runs strong round Cape Corrientes, and to benefit by it to the full extent, it is advisable to pass within sight of this cape, if the weather be favourable. Afterwards a moderate distance of 4 to 8 or 10 leagues may be preserved from the coast of Natal, unless the wind begin to blow from the S. E. with a rising sea; in this case, it will be proper to haul off to a greater distance from the land.

From the Mozambique Channel, along the bank of Cape Agulhas.

Whether the route through the Mozambique Channel, or any of those to the eastward of Madagascar, have been adopted, it will be advisable to approach within a moderate distance of the projecting part of the coast about Algoa Bay, if it has not previously been seen, farther to the northward; and afterwards it will be proper to keep near, or upon the edge of the bank of soundings, to benefit by the current.

But if a ship make the coast 12 or 14 leagues to the eastward of Cape Recife, in hazy weather, or if working to the westward in the night, great caution will be necessary to give a proper berth to the Doddington Rock, which has deep water near it, and lies 6 or 7 miles outside the Bird Islands, or about 4 leagues distant from the nearest land, and about 5 leagues south-westward of Cape Padron.

A description of the bank of Agulhas, the prevailing currents, also of winds and weather in its vicinity, will be found in Volume First of this work; but brief directions may here be useful for ships proceeding to the westward.

In February, March, and the early part of April, when S. E. winds prevail, the best track to preserve the strength of the current, after getting near the land about Algoa Bay, is to keep close along the outer edge of soundings until in about lon. 24° or $23\frac{1}{2}$° E.

Here, the direction of the stream begins to change from W. S.W. to S.W., and soon after to S. S.W. ½ W., for which a proper allowance should be made, by steering more towards the land, and keeping in deep soundings upon the edge of the bank.

In the winter months, when North-westerly and westerly gales are frequent, it is advisable to keep in with the coast, which partly shelters ships from the violence of these gales; for although the westerly current is strongest at the outer verge of the bank, ships which keep far out are liable to encounter very high seas, and be driven off a great way to southward by N.W. or northerly gales. From this cause, several ships have been greatly retarded in regaining their position *upon* or *near* the verge of the bank, whilst others, by keeping in with the coast, had smooth water at the same time, and got round the Cape five or six days sooner than the former, who parted from them off Algoa Bay.

At all times of the year, when the winds incline to blow strong between N. E. and West, it is advisable to borrow upon the bank, towards the coast, or at least to guard against being driven far to southward, where a contrary or eddy current often sets eastward. It is not thought dangerous to approach the coast of Africa, because the wind is seldom or ever known to blow with great violence directly on the shore, so that a ship may always clear it on one tack or the other. The coast is steep in most places, with soundings of 30 or 40 fathoms within a few miles of the shore, deepening gradually to 150 or 180 fathoms near the verge of the bank. With Cape Agulhas bearing West, distant 7 leagues, the depths are 24 or 25 fathoms; and from 24 to 30 fathoms irregular soundings, grey sand and shells, are got when it bears North, about 5 miles distant. When abreast of False Bay and Cape of Good Hope, the bank of soundings does not extend far out from the land; for here, the depths are 55, 65, and 70 fathoms, within a few miles of the shore.

THE CAPE OF GOOD HOPE is frequently the boundary of very opposite kinds of weather; for although to the eastward of it the winds and weather may often be found unsettled and threatening, yet no sooner has a ship got round to the westward of this promontory, than the weather *generally* becomes settled, with a strong and steady wind from southward. Directions for rounding the Cape of Good Hope.

When abreast of Cape Agulhas with a brisk S.W. or S. S.W. wind, a ship ought to keep well out from the coast, that she may be enabled to pass the Cape of Good Hope at a proper distance without tacking, and this is particularly necessary in the night.

In Volume First of this work, under the section marked "South Coast of Africa, from Cape Agulhas to Algoa Bay," the unfortunate loss of the Arniston has been mentioned, which was occasioned by her bearing away too soon, in order to round the Cape of Good Hope; whereas she got into Struys Bay, on the east side of Cape Agulhas. To guard against such a fatal mistake, if the longitude is not correctly known, the lead ought not to be neglected, and this, in thick weather, will always point out whether or not you are sufficiently advanced to the westward, to bear away with safety round the cape: for you ought not to bear away until after losing soundings on the western verge of the Cape Bank; and if soundings are obtained after edging away to the north-westward, you ought immediately to haul off from the land.

HAVING rounded the CAPE OF GOOD HOPE, ships generally steer a direct course about N.N.W. to N.N.W. ½ W. for St. Helena; but it seems advisable to steer about N.W. by N. until a considerable distance is gained from the western coast of Africa, because you are liable to encounter N.W. and W.N.W. squalls at times, parti- Remarks on the winds and weather betwixt the Cape and St. Helena.

cularly when near the coast. These N.W. squalls do not often happen, but they have sometimes been experienced in both seasons.

April 26th, 1796, we rounded the Cape, and steered N.N.W. $\frac{1}{2}$ W. with a steady strong trade wind, which continued until we anchored, May 5th, at St. Helena.

April 26th, 1799, we rounded the Cape in the Anna, being the same day of the month as mentioned above, and steered N.N.W. $\frac{1}{4}$ W., with a steady wind from the southward, which carried us to lat. 30° S. Here the wind became light and variable, then veered to northward, with cloudy unsettled weather and some rain; and in a sudden gust from northward in the night, we lost our fore-topmast, with four men who were furling the top-gallant-sail. These winds continued adverse during two days; the southerly wind then returned, which carried us, May 8th, to St. Helena.

August 14th, 1801, we rounded the Cape in the same ship, steered N.N.W. $\frac{1}{4}$ W., with a strong S.S.E. gale, which continued 30 hours, and carried us to lat. $31\frac{1}{2}$° S.; the wind then became light, shifted to N.W. and N., with squalls, cloudy weather, and rain. After $3\frac{1}{2}$ days of adverse winds, the southerly trade prevailed, with which we anchored 26th at St. Helena.

Sailing directions.

When round the Cape, and having got a moderate distance from the coast, by steering about N.W. by N., a direct course about N.N.W. $\frac{1}{4}$ W., or N.N.W., will be fair for St. Helena.

If the wind blow strong and veer to E.S. Eastward, an allowance for a leeward current ought to be made, particularly if the weather become cloudy,* and the longitude be not correctly ascertained; for in such case it will be prudent to get nearly in the parallel of the island when several leagues eastward of its meridian. But if the longitude is *very exactly* ascertained by chronometers and observations, steer direct to make the island of St. Helena bearing about N.W. or N.W. by W., the variation† here being $17\frac{1}{2}$° W. in 1816; then conform to the instructions in Volume First of this work, where a particular description is given of that island, and of the road. It may, however, be useful to point out the positions of the two following dangers, as ascertained by Mr. George Thoms, of H.M.S. Northumberland, in his survey of the bank of soundings around the island in 1815.

St. Helena.

Barn Ledge.

Barn Ledge, lying rather more than half or three-quarters of a mile to the S. E. of Barn Point, is about $1\frac{1}{2}$ cable's length in circuit, having generally a heavy ground swell upon it, with depths of 12, 9, 8, and 6 fathoms, to 25, 21, and 20 feet, pointed rocks, on the shoalest parts, as far as could be judged by the lead. When upon it, Barn Point bore N.W. $\frac{1}{4}$ N., distant about three-quarters of a mile; Turk's Cap in one with Turk's Cap Battery W. $\frac{1}{2}$ S. to W. $\frac{3}{4}$ S., distant three-quarters of a mile. The Turk's Cap is a remarkable hill, about half-way between Barn Point and Prosperous Bay. Large ships coming from the south-eastward should keep George Island open with Saddle Point, which is $1\frac{3}{4}$ miles north of it, until Sugar-Loaf Point is open with Barn Point, which will carry them clear outside of Barn Ledge; between it and the shore there are 24 and 20 fathoms in a channel rather more than a quarter of a mile wide, and close to the ledge on the outside there are 32 and 34 fathoms.

Sperry Ledge.

Sperry Ledge, at the south point of the island, distant from it somewhat more than a mile, and about a mile South from Sperry Rock, is a shoal of rocks, about 2 cables'

* Good chronometers are of great utility in running for St. Helena; I have seen the weather continue so cloudy during the whole of the run from the Cape to this island, that no lunar observations could be obtained; and the same was experienced during the whole of a passage from St. Helena to England; but this was remarked as *very* extraordinary, and probably *seldom* occurs.

† The variation of St. Helena, in 1724, was 6° 35′ W.

lengths in circuit, with depths of 16, 12, and 10 fathoms, to 24 and 18 feet, pointed rocks, on the shoalest parts, and having often upon it a heavy ground swell. When upon it, Sperry Rock bore N. by E. $\frac{1}{4}$ E. by compass, the North Black Rock N. by E. $\frac{1}{2}$ E. nearly touching Sperry Rock, S.W. point of the island about N.N.W., Long Range Point, E. by N. $\frac{3}{4}$ N., which lies to the East of Sandy Bay. To avoid this danger, in sailing along the S.E. side of the island to the westward, keep Shore Rock open with Long Range Point till the northernmost of the Black Rocks opens to the westward of Sperry Rock, and then you may haul up for the S.W. point of the island. About a mile W. by N. of Sperry Ledge there is a patch of 10 fathoms, rocky bottom; between Sperry Rock and the Ledge there are 24, 26, and 35 fathoms water, and the bank of soundings extends 2 miles outside the Ledge, in a S. and S.S.W. direction, with 50 and 58 fathoms, fine sand, on its outer verge.

FROM ST. HELENA TO ASCENSION, AND THENCE TOWARDS THE BRITISH CHANNEL, WITH A BRIEF DESCRIPTION OF THE AZORES.

Remarks for the route from St. Helena across the equator.

FROM ST. HELENA, homeward bound, some navigators prefer crossing the equator far westward, with the view of having steady winds, and avoiding a space of variable airs and calms, which they imagine to prevail betwixt the limits of the North-east and South-east Trade, farther to the eastward. This opinion seems not supported by experience, for some ships, when far to the westward, have been detained several days by calms, thick, foggy, wet weather, and a turbulent swell; when others that crossed the equator in lon. 19° or 20° W. had dry weather and brisker winds, and this has even happened to several ships which passed in sight of the Cape Verde Islands. It is, however, prudent not to cross the equator far eastward, to avoid light winds and calms, which often prevail in the vicinity of the coast of Guinea.

The prevailing winds about the equator have been exhibited in a tabular form, in Volume First of this work, where the routes of homeward-bound ships will be found, with subsequent directions for ships passing the equator when bound outward: but though those directions may also answer for homeward-bound ships, some brief remarks in this place may be found useful.

Directions for sailing from St. Helena to Ascension.

Departing from St. Helena for Europe, a direct course may be steered for the Island Ascension, which is about N.W. by N.; and in this part of the passage, a steady south-east trade generally prevails all the year, with a westerly current at times. The Island Ascension may be passed on either side, at any convenient distance, but ships commonly pass to the westward of it, at from 3 or 4 to 10 or 12 leagues distance.*

From thence to the equator.

From the Island Ascension, steer N. N. W. or N. by W. $\frac{1}{2}$ W. towards the equator, which ought not to be crossed to the eastward of lon. 18° or 19° W., nor to the westward of lon. 24° or 25° W. When the sun is in the northern hemisphere, it may be proper to cross it in lon. 21° to 23° W., because variable light winds extend a great way out from the coast of Africa, in July, August, and September, whilst the sun is returning from the tropic of Cancer to the equator.

To sail from the equator to the northward.

From hence, a North or N. by W. course may be steered if the southerly winds become light, in order to reach the North-east Trade as soon as possible; but if variable light breezes are found to continue far to the northward of the equator, a berth of 40 or 50 leagues at least ought to be given to the Cape Verde Islands.

Having entered the North-east Trade, a ship's sails should be kept *good full* in

* Ascension is at present a military station, and a British ship of war frequently remains there.

crossing it, that her velocity may be increased, to get speedily to the northward. In this route, the sargasso or gulf weed is usually first seen in lat. 24° or 25° N., and it extends as far to the northward as lat. 40° or 42′ N.

When ships get to the northward of the northern limit of the Trade, in lat. 30° or 32° N., they are generally in lon. 39° to 42° W.

It is *seldom* advisable to pass to the eastward of the Azores, because northerly winds, often prevailing betwixt these islands and the coast of Portugal, are unfavourable for pursuing a direct course towards the British Channel. Ships ought, therefore, to pass round to the westward of the Azores; or should the wind veer to north-westward when near these islands, the most convenient channel may be adopted to pass through them, as circumstances require.

It has, nevertheless, sometimes happened, that ships which passed to the eastward of the Azores have had S. W. and West winds, and reached the British Channel sooner than others which went round to the westward of these islands. A single ship in time of war might sometimes adopt the eastern route with advantage, to avoid the enemies' cruizers, which frequently take their station to the westward of Flores.

If the Azores should be rounded at a considerable distance to the westward in the spring, it will be prudent to keep a good look-out for icebergs, which are occasionally drifted by a southerly current near these islands before they are dissolved. On the 14th April, 1817, the Minerva, from New York, bound to Liverpool, fell in with four large icebergs, in lat. 42° 47′ N., lon. 47° W. H. M. Ship Emulous, February 26th, 1833, in lat. 43° N., lon. 49° W., fell in with packed field ice, and afterwards with three large icebergs.

The Government packet Calypso, from Halifax, a missing ship, in the same season, is supposed to have perished by striking against the ice. There is also great reason to think that several ships have foundered in the night, by coming in contact with the wrecks of water-logged timber ships, or others, several of which are constantly floating and drifting about in the North Atlantic Ocean.

Islands Azores.

THE AZORES, or WESTERN ISLANDS, are nine in number, exclusive of a few small islets or dangers, contiguous to some of them; they are mostly formed of high mountainous land, with steep, rocky, iron-bound coasts, affording no safe harbours for large ships. There are several places where vessels anchor at these islands, all more or less exposed to stormy weather, which prevails greatly in winter. Earthquakes are also, at times, experienced, producing great devastation.

Flores.

FLORES, the westernmost island, extends about $3\frac{1}{2}$ leagues North and South; the northern extremity of it, called Ponta del Gada, is in lat. 39° 33′ N., lon. 31° 11′ W. by a series of lunar and chronometric observations taken by Sir Home Popham in H. M. S. Romney, and agreeing within $2\frac{3}{4}$ miles of Tofina's survey of these islands.* There is a rocky bank, said to lie about a league off the S. E. point of Flores, and anchorage is found in some parts close to the shores of the island.

Corvo.

CORVO, separated from the north end of Flores by a safe channel about 3 or 4 leagues wide, is the north-westernmost of the Azores, and about $1\frac{1}{4}$ or $1\frac{1}{2}$ leagues in

* The positions of the Azores are *here* generally given from the surveys of Fleurieu and Tofino, which agree nearly with each other. These islands, discovered about 1460, were named Ilhas dos Açores, or the Isles of the Hawks, by the Portuguese, from the great number of those birds seen there. Hence the name Azores.

extent North and South; its northern extremity being in lat. 39° 44′ N., and Point Pesqueira Alto, the southern extremity, in lat. 39° 41′ N., lon. 31° 6′ W. These two islands are hilly, and may be seen 11 or 12 leagues in clear weather; they are separated from the central group of Azores by a safe channel about 35 leagues wide.

FAYAL, the westernmost of the central group, is high, about 3 leagues in extent, of circular form; and its western extremity is in lat. 38° 34′ N., lon. 28° 52′ W.; South-East Point, or Look-out Hill, in lat. 38° 30′ N., lon. 28° 42′ W. by Captain Owen's Tables. Fayal.

PICO is separated from the S. E. part of Fayal by a narrow channel, having some rocks near the middle of the southern entrance, and this island extends about 5 or 6 leagues nearly W.N.W. and E. S E. The peak, from which the island takes its name, is near the S. W. part, in lat. 38° 27′ N., lon. 28° 28′ W.: this peak is terminated at the summit by a sharp cone like a sugar-loaf, elevated about 7,000 feet above the level of the sea. Pico. The Peak.

ST. GEORGE, fronting the northern side of Pico, and separated from it by a safe channel 3 or 4 leagues in breadth, is a narrow island, about 7 or 8 leagues in extent W. N. W. and E. S. E.: there is a small road or harbour on the south side the island, about 2 leagues from the west point, and close to the Point of Velas, where there is a village of the same name. The S. E. extreme of this island, called Point del Topa, is in lat. 38° 30′ N., lon. 27° 51′ W. St. George. South-east Point.

GRACIOSA, separated from the north side of St. George by a safe channel about 7 or 8 leagues wide, is 2 or 2½ leagues in length, having several high hills on it, which give it the appearance of two or three islands when first seen. The anchoring place is at Santa Cruz, on the N. E. part of the island. The north point of the island is in lat. 39° 8′ N., lon. 28° 6′ W.; and the S. E. point, called Point del Carapacho, bears N. 49° E., distant 25 miles from the N. W. point of St. George, and N. 60° W., 29 miles distant from Point Ruba, or the west point of Terceira. Graciosa. North Point.

TERCEIRA is separated from the S. E. point of St. George by a safe channel 7 or 8 leagues wide, and it is moderately high land, 5 or 6 leagues in length East and West. Mount Brazil is a forked hill, near the middle of the south coast, in lat. 38° 38½′ N., lon. 27° 13′ W., and close to the sea; it is a good mark for the Bay of Angra, which is close to the eastward. Terceira. Mount Brazil.

The city of Angra is the capital of the Azores, and here provisions are plentiful, and at moderate prices. About 1½ leagues eastward of Mount Brazil are two steep islets, called the Goat Islands, and 2 miles S. E. of them are four rocks, called Frailes, or Friars, with breakers near them. Angra.

A vessel coming from S.W., South, or S. E., bound to Angra Bay or Road, should steer towards Mount Brazil as soon as it is seen; but as the currents are strong and fluctuating, great care should be taken, when calm, not to come too near the steep iron-bound coast comprised between Mount Brazil and the west end of the island. Directions to sail to that Road.

Coming from northward round the east end of the island, a wide berth must be given to the south point of Porto Praya, from which a rocky bank extends East and E. N. E. to a considerable distance. In approaching Angra from eastward, the Frailes and Goat Islands will be discerned; between the latter and the main island there is a passage, having 15 fathoms, sandy bottom, where a ship might anchor in case of ne-

cessity. Although there are 24 fathoms water betwixt the two Goat Islands, that passage, being only a cable's length in width, ought never to be attempted. The channel between Goat Islands and the Frailes ought always to be preferred, being 2 miles broad, with 90 fathoms water, and clear of danger: or the passage outside the Frailes may be adopted, giving the berth to the rock under water that lies about a musket-shot to the southward of them.

Angra Bay unsafe in stormy weather.

Angra Bay is only about half a mile broad, and the bottom being mostly rocky, vessels moor with several anchors nearest to the western side. When light winds prevail, in June, July, August, and September, vessels may be safe in this road; but it being open from S. S.W. to E., there is no shelter from winter storms, which send in a prodigious sea round the mount from south-westward; so that the only resource at these times is to proceed to sea on the least appearance of bad weather. The flood sets to N.W. and the ebb to S. E., high water on full and change of moon at about $11\frac{3}{4}$ hours, and the rise of tide is from 4 to 6 feet, according to the wind, but never exceeds 8 feet.

Porto Praya Bay and anchorage.

Porto Praya Bay, to the northward of the east point of Terceira, is the best among these islands, where a whole fleet might anchor in 24 fathoms, sandy ground; it has the form of a crescent, and the point on the north side, called Mountain Point, has near it a small islet to the N. E. The best anchorage is in 24 fathoms, sand, with this islet shut in with Mountain Point, and the two towers at the bottom of the bay brought in one. With the town bearing from N.W. to N. N.W., ships may also anchor nearer the shore, in 20 and 16 fathoms water. There is a good landing place near the castle, but boats ought not to attempt to land at the bottom of the bay to the south-westward, where there is a small bank, on which they would ground.*

St. Michael.

ST. MICHAEL, separated from the S. E. end of Terceira by a safe channel 23 or 24 leagues wide, is the longest of the Azores, being 10 or 11 leagues in extent East and West, but only from 2 to 3 leagues in breadth. The town of St. Michael is on the south side the island, where vessels anchor in the bay near the shore; but it affords no shelter from storms, which frequently happen in winter. The West point of this island, called Ferraria, is in lat. 37° 54′ N., lon. 25° 59′ W. The variation here, about $15\frac{1}{2}$°W. in 1814.

Volcanic danger.

Some violent convulsions of the earth were felt at St. Michael, from July, 1810, to February, 1811, and the people inhabiting the western parts of the island were alarmed by repeated shocks in January of this year, until the 1st of February, when a volcano burst out of the sea, projecting upwards, smoke, flames, and combustible matter. The crater appeared about 200 yards in circumference,† and on February 6th, being five days after the volcano burst forth, it appeared like a rock under water, with the sea

* The town of Praya was destroyed by an earthquake in the year 1614; it was however rebuilt, and in June, 1841, contained with its adjacent villages nearly 2000 houses, and a population of 9000 souls, when it again suffered severely from the same cause. On a representation from the Consul respecting the great probability of shoals having been formed near the island by the violent volcanic action so alarmingly evident during the several days' continuance of the late earthquake, the Admiralty despatched Captain Vidal in H. M. Steam Vessel Styx to examine the neighbourhood, as well as the channel between Terceira and St. Michael. Captain Vidal has satisfactorily shewn that there are no shoals in the suspected localities, and has now commenced a survey of the entire group of Islands.

† The commander of H. M. Sloop Sabrina landed on this little *new formed* island, and scrambled among the ashes and cinders to a considerable distance, as it was well elevated above the sea at this time; the crater had diffused so much heat to the edge of the sea, which washed in upon it, that many fish were seen floating about dead, and the water was very hot. This volcanic isle was, after a few days, again submerged, and since that time there have been some eruptions near the same place.

breaking furiously over it. This danger is in lat. 37° 52½′ N., and about 1 or 1¼ miles distant from the nearest shore of the west end of St. Michael, being a little to the south-westward of Point Ferraria, and in a westerly line from Pico de Ginetes. The fishermen say there are soundings of 80 fathoms near it. The subterraneous pressure of this volcano had probably forced up the rocky bottom near the surface of the sea a considerable time prior to the explosion; for the ship Swift, with all her crew, was lost near, or on the spot, before the appearance of this strange phenomenon.

ST. MARY, the south-easternmost of the Azores, is distant about 12 leagues southward from the east end of St. Michael, and, like the other islands, is high, but of small extent. The west point, called Maldemarenda, is in lat. 36° 57′ N., lon. 25° 16½′ W.; the town and road of St. Mary, where vessels anchor, is on the south side the island, near the S.W. point, in lat. 36° 58′ N., lon. 25° 13′ W. St. Mary.

THE FORMIGAS, or ANTS, lying 3 or 4 leagues N. E. by N. of St. Mary, and fronting the channel between it and the east end of St. Michael, consist of a range of rocks, 7 or 8 in number, of considerable extent North and South. Some of them are low, others 40 or 50 feet in perpendicular height, and the sea breaks very high against them, and also between them in some parts. They are steep to, for no soundings are got until close upon them. The Great Formigas is in lat. 37° 17′ N., lon. 24° 56′ W., and it bears N. 34° E. from the peak of the highest part of the island St. Mary, and N. 24° E. from the S. E. point of that island, called Point de Castelo. Formigas.

A shoal of breakers is said to bear *true* S. 40° E., distant 1½ leagues from the Formigas, but its existence seems doubtful.

The channel between the Formigas and St. Michael is 5 or 6 leagues wide, and free from danger. The little channel, formed betwixt the Formigas and St. Mary is also safe, and about 3 leagues wide, but it is not so much frequented as the other. They are both destitute of soundings, and the islands of St. Michael and St. Mary are likewise steep to approach. Channels among the Azores,

When any of the homeward-bound East India ships fall in with the Azores, they ought to adopt one of the wide channels, to pass through amongst them to the northward; the largest of these is the Western Channel, bounded on the west side by Flores and Corvo, and by Fayal and Graciosa to the eastward. If they do not proceed through this channel, they should pass through the channel which is formed on the west side by Terceira and the central group of Azores, and on the east side by the island St. Michael. may be used by homeward-bound ships.

FROM THE ENTRANCE OF THE BRITISH CHANNEL TO THE DOWNS.

AS ALL SHIPS bound homeward from India may not be in possession of the best charts and instructions necessary for entering the British Channel, some brief directions for that purpose may be found useful. British Channel.

Ships proceeding towards the British Channel have generally been directed to get into the parallel of lat. 49½° N. or 49° 25′ N., when considerably to the westward of Cape Clear, then to steer eastward on this parallel until in soundings of 82 fathoms, fine white sand with black and yellow specks, which soundings are found on the outer edge of the bank about 50 leagues westward of Scilly. By running 16 or 17 leagues farther eastward on the same parallel of latitude, they will have 90 fathoms, fine white sand: from hence, continuing on the same parallel about 20 leagues to the eastward, Remarks on the directions for entering it.

the soundings will decrease to 70 fathoms, but not very regularly in some places; and when, in the same parallel, the soundings decrease to 67 or 65 fathoms, shells and small yellow stones or red sand, the Scilly Islands will be nearly abreast. It would be unsafe to approach these islands under 63 or 64 fathoms in the night or in foggy weather, for neither the quality of the bottom nor the depths of water will be *always* a *sufficient guide* to point out their proximity. At the distance of about 7 leagues South, S.W., and West, from the nearest of the Scilly Islands, the depth is nearly equal, being 63 or 64 fathoms, sand and shells, or ooze and shells; and there are about 50 fathoms within 2 leagues of the outermost rocks, in a S. E., South, S.W., and West direction, with 40 or 45 fathoms nearly close to the South-westernmost rocks.

Doubts on the propriety of entering the channel on the parallel of 49½° N.

The directions formerly given for entering the British Channel, by steering to the eastward in the parallel of lat. 49° 25′ to 49° 30′ N., seems only applicable to ships navigated by dead reckoning, or when the longitude is not ascertained by lunar observations or chronometers; and even under such circumstances, this seems not to be the best track for approaching the British Channel.

First.—Because ships are obliged to make a more circuitous route from the Azores, to get into the parallel of lat. 49° 25′ N., well to the westward of Cape Clear, than would be requisite in steering a direct course for the Lizard Point; and as south-westerly or westerly winds prevail great part of the year, there can *seldom* be occasion to steer so far to the northward.

Secondly.—Because, in time of war, the enemies' cruizers keep *frequently* to the westward of Cape Clear, in lat. 49° to 50° N.; and they are *generally* best avoided by steering from the W. S. Westward a direct course into the British Channel.

Thirdly.—Because ships, by keeping in the parallel of lat. 49° 25′ or 49° 30′ N., have, when near the Scilly Islands, frequently encountered sudden shifts of wind from the southward, whereby they were driven to the N.W. of these islands, into St. George's Channel. From this cause, many ships have been forced to take shelter in Cork, or some of the harbours on the coast of Ireland, where they were detained long by southerly winds; whereas, the same winds would have been favourable for them in entering and running up the British Channel, had they kept a little farther to the southward.

Fourthly.—Because, when south-westerly or southerly winds prevail, the flood tide sets 8 or 9 hours northward into St. George's Channel, and the ebb only 3 or 4 hours southward; by which ships, pursuing the route in the parallel of lat. 49° 25′ or 49° 30′ N., are liable to be drifted among, or to the northward of the Scilly Islands, during thick foggy weather, when the latitude is not ascertained by correct observation.

From what has been stated, the following route *seems* to be the most eligible one for entering the British Channel.

Directions for approaching and entering the Channel.

HOMEWARD-BOUND SHIPS, after passing the Azores, should shape a direct course towards the Lizard Point, inclining a little to the northward as circumstances require. From January to May, when north-easterly or northerly winds frequently prevail outside, and in the entrance of the British Channel, it will be proper to get into about lat. 49° N., when the meridian of Cape Clear is approached: an easterly course for the Lizard Point ought then to be followed, and if the wind blow steadily from northward, the parallel of 49° 30′ may be preserved in passing the Scilly Islands.

From April or May to November or December, south-westerly and westerly winds generally prevail; ships may then steer to get into about lat. 48° N. when they reach the meridian of Cape Clear, and from this position a direct course may be steered for the

Lizard Point. But at all times, navigators about to enter the British Channel ought to act according to particular circumstances, by hauling to the northward or southward, as the winds render advisable.

Winds. It may be observed, that north-easterly and northerly winds usually prevail in February, March, and April; at all other times, south-westerly and westerly winds are more frequently experienced. Next to these, southerly and north-westerly winds prevail near the entrance of the British Channel; but those from the N.W. quarter are seldom of long continuance, and generally veer to westward, although at times they change to North and N.E.

Currents. When strong westerly winds continue, an easterly current is frequently forced by them towards the British Channel, but with steady easterly winds, the current has been often found to set out to the westward; more particularly when the Bay of Biscay is open, a south-westerly current is likely to be experienced.

Ushant Lights. If a ship happen to approach the projecting part of the French coast at the entrance of the channel, it may be observed that Ushant, a steep craggy island, about 4 miles long from East to West, and 2 miles in breadth, has on its N.E. point a lighthouse shewing a bright fixed light at an elevation of 272 feet above high water: it is in lat. 48° 28′ 31″ N., lon. 5° 3′ 19″ W., and may be seen in clear weather at the distance of 6 leagues. The soundings near Ushant are 64 and 65 fathoms; high water about $4\frac{1}{2}$ hours on full and change of moon. Variation about $26\frac{1}{2}$ W. (1828).

Scilly Islands. THE SCILLY ISLANDS, lying off the Land's End, are, both from their character and position, justly regarded as extremely dangerous to vessels approaching the channel and doubtful of their reckoning; under which circumstances they ought to keep well to the southward when passing them, and on no account ought these islands to be approached under 60 or 62 fathoms in the night, or in foggy weather. To the southward and abreast of them, in lat. 49° 20′ N., the depth is 70 fathoms, yellow or white sand, and the tide flows here to $4\frac{1}{2}$ hours on full and change of moon. Near, and among the Scilly Islands, the tides set very irregularly, frequently all round the compass.

St. Agnes Light, in lat. 49° 53′ 37″ N., lon. 6° 19′ 23″ W., is easily known by its *revolving* every minute, the light being obscured for a short time in each revolution: it is a bright light, and may be seen in clear weather nearly 6 leagues. The light is 138 feet above high water, and the height of the building is 53 feet. The Island of St. Agnes, on which it is placed, is the southernmost of the Scilly Islands that is inhabited; but rugged islets or dangerous rocks stretch from it about 5 miles to the westward, having irregular soundings from 40 to 50 fathoms about 1 or 2 miles W. by S. $\frac{1}{2}$ S. from them, and a rocky spot, with overfalls from 50 to 16 fathoms, about 5 miles S.W. $\frac{1}{2}$ W. from them.

When certain of having passed the Scilly Islands, a more northerly course should be steered to make the land about the Lizard Point, if the wind is favourable; but with a scant southerly wind, or in thick foggy weather, that point ought not to be approached under 45 or 46 fathoms, which depths are about 3 leagues off it; and there are 10 or 12 fathoms close in with the rocks, called the Stags, that front the point. Lizard Point and Lights. The two fixed lights on the Lizard Point are bright, and when the weather is clear, may be seen at the distance of 20 miles, and at such times may be sighted with safety in the night; there is no danger in approaching the point within 2 or 3 miles, with daylight, the soundings being irregular from 30 to 40 fathoms at that distance. The lighthouses bear W. $\frac{3}{4}$ N. and E. $\frac{3}{4}$ S., 223 feet from each other, and are both 45 feet in height; the eastern light is 221 feet and the western light 224 feet above high water.

Abreast the Lizard Point, the stream of flood runs eastward in mid-channel, till nearly 8 hours on full and change of moon, and it is then about half ebb upon the shore.

Eddystone.

Between the Lizard Point and the Eddystone, a ship may stand off to 50, and in shore, to 42 fathoms, but not nearer; as there are 36 fathoms nearly in the stream of the latter, the light of which is bright, and may be seen 4 leagues off in clear weather. From hence, to the Start Point, a ship may approach the shore to 32 fathoms, and stand off to 46 fathoms. A revolving light, 204 feet above the sea, shewing a succession of brilliant flashes, is exhibited on the Start Point, and an additional light fixed is also exhibited in the same lighthouse, in the direction of Berry Head; there is an interval of a minute between the flashes, and the light may be seen in clear weather 6 leagues.

About 3 or $3\frac{1}{2}$ miles N. W. $\frac{1}{2}$ N. from the Eddystone, is the Hand Deep Bank, having only 4 fathoms on it at low water spring tides, and 30 fathoms very near it.

To proceed from hence up channel.

If a ship pass the Lizard Point with *unfavourable* weather, so as to prevent its being discerned, care ought to be taken to get a sight of the Eddystone Lighthouse, or, at all events, of the land over the Start Point, which is a sloping oblong hill. This is indispensable, if the position of a ship has not been previously ascertained, to avoid getting over on the French coast, near the Caskets and their adjoining dangers; for the indraught of the tide between the coast of Brittany and the Islands of Jersey and Guernsey has proved fatal to several ships steering up channel, which did not keep within a proper distance of the English coast.

Caskets.

THE CASQUETS, or CASKETS, having three revolving lights, are easily known; these and the Bill of Portland bear nearly *true* North and South of each other, and are distant about 13 or 14 leagues: as the tides run strong here, and being the narrowest part of the channel until the strait of Dover is approached, it becomes more necessary to make the land about the Start Point, in order to shape a proper course to avoid the dangers off the French coast, and to give a berth to the Shambles and Race of Portland. On the Bill of Portland there are two bright fixed lights. In this part of the channel, the tides run from 2 to 3 miles an hour; and between Alderney and Cape La Hogue, from 6 to 7 miles per hour, which is called the Race of Alderney.

From the Start Point, a course ought to be pursued up channel as circumstances require, borrowing towards the English coast with northerly winds, or keeping near mid-channel with south and S. W. winds. If the Start Point has been passed at the distance of 4 or 5 leagues, an E. by S. course will be proper to steer with a fair wind.

The Owers Floating Light is bright and fixed, and may be seen 3 leagues in clear weather; the light vessel is moored in 11 fathoms water, and a gong is sounded every 10 minutes during fogs. When ships are seen approaching danger, a gun is fired, and the flag lowered half-mast until they alter their course.

Variation of the compass.

Lieutenant Murdoch M'Kenzie, Marine Surveyor to the Admiralty, made the variation of the compass 23° West at Tor Bay in 1781, and 23° W. at St. Helen's in 1783. Lieutenant John Murray, in a survey of the coast near Beachy Head, made the variation at that place 23° W. in 1806. Mr. Grœme Spence, a very accurate surveyor, who, under the direction of the Admiralty Board, surveyed minutely great part of the coasts of England, made the variation 24° 45′ W. at the Scilly Islands, in 1792. From 1792 to 1817, a period of 25 years, the total increase of the variation in London was $33\frac{1}{2}$ minutes West, which, added to the observed variation by Mr. Spence in 1792, at the

Scilly Islands, would make the variation there 25° 18′ W. in 1817, which is probably near the truth; for the annual increase of variation cannot differ *much* at the Scilly Islands from that observed at London, as the quantity is very *small*, from the magnetic pole being nearly stationary; and it is now nearly certain that the westerly variation is beginning to decrease. The mean variation at Greenwich, for the first six months of this year, (1842) was 23° 12′ W.

Ships entering the British Channel may allow about 26° of west variation until they approach the Scilly Islands, 25° in running up to the Isle of Wight, and 24° from thence to Dungeness.

FROM THE START POINT, an E. by S. course will in *general*, with a fair wind, carry a ship directly up channel until abreast of Beachy Head; which ought not to be approached under 18 fathoms in a large ship, on account of the shoals that lie to the S. E. and eastward of it. The light on Belletout Cliff, Beachy Head, is bright, revolving every two minutes, and may be seen 9 leagues in clear weather; when kept open of the Cliff, it leads clear of the Royal Sovereign Shoal. When past these shoals, it is proper to haul up east and E. N. Eastward for Dungeness, in order to give a berth to the Ridge and Varne Shoals, in proceeding towards the South Foreland. From the Start Point up channel.

It may be proper to observe, that an accumulation of water is forced into the British Channel with strong S. W. winds, the tides being *then* much higher than at other times. The velocity of the flood is also increased by these winds, for it continues an hour, or more, longer than usual, the ebb being greatly repressed by them. From this circumstance, ships running up-channel with a strong S. W. gale are liable to be *ahead* of their reckoning, if a proper allowance is not made: for by entering it with the first of the flood, and running at the rate of 8 or 9 knots by the log, they will carry the tide with them 10 or 11 hours, which will probably carry them all the way from the Start, up to Beachy Head, or, in some cases, nearly to Dungeness. From this cause, several ships have got upon the Ridge or Varne Shoals, or over towards Cape Grisnez, when by the reckoning they had scarcely passed Beachy Head. Caution in sailing up with a strong S. W. wind, or in foggy weather.

The weather in the Channel being frequently very thick and foggy, great caution is necessary when navigators are not well acquainted, particularly if they encounter variable winds blowing strong. Between the Start Point and the Bill of Portland, a ship may keep in from 30 to 36 fathoms; by not exceeding the latter depth, she will avoid the strong indraught between Guernsey, Jersey, and their contiguous dangers. Off the Bill of Portland, the flood runs to the eastward until $10\frac{1}{4}$ hours at full and change of moon. The Race and Shambles should not be approached under 26 fathoms, for the water deepens to 40 and 45 fathoms in some holes near the race, with very uneven rocky bottom.

Between the Bill of Portland and Dunnose, from 35 to 26 fathoms are good depths to keep in, with a N. W. or northerly wind; by not coming under 26 fathoms, the indraught towards the Needles and Freshwater Bay will be avoided. The lead ought to be kept going when the Isle of Wight is approached during thick weather, for by neglecting it, many ships have been lost. From the Bill of Portland to Dunnose.

The flood runs to the eastward off Dunnose, in mid-channel, until about 11 hours at full and change of moon; and about 2 hours sooner on the shore, it is high water. The south part of the Isle of Wight ought not to be approached too closely, for the shore is fronted by a rocky uneven bottom, with strong ripplings during spring tides.

From Dunnose to the Owers.

FROM DUNNOSE to the Owers, a ship may approach the shore to 22 or 20 fathoms, and stand off to 30 fathoms; when near the Owers in thick weather and light winds, the lead ought not to be neglected, because the last quarter flood and the whole of the ebb set strong over that dangerous bank towards St. Helens Road, and 20 fathoms water is very near it. To the eastward of the Owers lies KINGSMORE SHOAL, extending N. E. and S.W. about 2 miles, having $5\frac{1}{2}$ and 6 fathoms, hard gravel, on its S. E. part, which is the least water. From its S. E. extremity the *true* bearings and distances of the following places were ascertained by Colonel Beaufoy, who surveyed this shoal; viz. Beachy Head signal-mast E. 5° 9′ N., distant $26\frac{1}{4}$ miles; west side of Chanctonbury Ring N. 9° 47′ E., distant 10 miles; High Down Windmill N. 4° 31′ E., distant $8\frac{1}{5}$ miles: Chichester Spire N. 58° 55′ W., distant $15\frac{2}{3}$ miles; and the Owers Light W. 12° 34′ S., distant 9 miles.

Kingsmore Shoal.

Beachy Head.

Between the Owers and Beachy Head, from 28 to 18 fathoms are good depths to preserve; by not borrowing under 18 fathoms, a ship will pass outside the shoals that lie to the E. S. E. of Beachy Head, the outermost of which is WIDE MOUTH SHOAL, generally called the Royal Sovereign Shoal, because H. M. Ship of this name was nearly lost on it; it is circular, and about 500 feet in diameter, with 12 or 13 feet water on it at low spring tides. This shoal was examined by Colonel Mark Beaufoy, accompanied by some fishermen, who ascertained its relative position from the following places by sextant.

Wide Mouth Shoal.

Bexhill Church bears *true* N. $17\frac{1}{2}$° E., distant $6\frac{1}{3}$ nautic miles from the shoal; Willington Mill *true* W. $18\frac{3}{4}$° N., distant $7\frac{2}{3}$ miles; Beachy Head flagstaff *true* W. $2\frac{1}{2}$° S., distant $6\frac{2}{3}$ miles: and the shoal bears E. S. E. by compass from Beachy Head flagstaff. When upon the shoal, Murray Tent is on with the east knowl, called Tillum, and the grove near Hollywell on with the Chalk Pit and three Bergs.

To avoid the shoal in coming up channel, when round Beachy Hoad, observe a spot called Greenland, which keep open with the Bluff Head, and steer E. by N. by compass, to keep clear of the shoal, and you will fetch Dungeness lighthouse.

There is said to be another patch of this shoal, with 4 fathoms water on it, bearing by compass about E. S. E. $\frac{3}{4}$ S. from Beachy Head, distant $6\frac{1}{2}$ miles, and about a mile outside the former; and another patch, called the Horse of Willington, is said to lie within them.*

Tides.

Off Beachy Head, the flood runs eastward until $11\frac{3}{4}$ hours on full and change of moon.

By bringing either of the three windmills on with the sea houses at East Bourne, there is good anchorage in hard blue clay, and safer riding than at Dungeness.

From Beachy Head to Dungeness.

From the shoals off Beachy Head to Dungeness, a ship may stand off to 20, and in-shore to 12 fathoms; by not coming under this depth, she will pass clear outside the shoals that lie to the west and eastward of Dungeness. Here, the flood which enters the channel from westward comes in contact with the flood that comes from the north sea through the Strait of Dover, which is called *the meeting of the tides*. Their direction and velocity hereabout depend much on the strength of the prevailing winds, being subject to great irregularities at times. Dungeness Light is fixed, and is visible 6 or $6\frac{1}{2}$ leagues in clear weather.

From Dungeness to the Downs.

FROM ABREAST OF DUNGENESS, a ship must not stand off farther than 17 or 18 fathoms, on account of the Varne; nor under 12 fathoms towards the shore,

* The Admiralty Chart, containing an excellent survey of these shoals and the adjacent coast, will be found a valuable guide for this part of the Channel.

until clear of the ledge of rocks that projects above a mile from the shore westward of Folkstone. When to the eastward of this ledge, the shore is safe to approach to 10 fathoms, and to avoid the Varne and Ridge, in passing from Folkstone to Dover, a ship should keep within 3 miles of the shore.

Proceeding from Dover Road towards the Downs, 17 fathoms would carry a ship outside the South Sandhead, the track of 15 fathoms is directly towards it, and 12 or 13 fathoms will carry her within it; but the South Foreland being pretty steep to, many ships have run upon the shore there in the night, during thick foggy weather, because they were fearful of getting near the Goodwin Sand. When the South Foreland lights are seen, a ship will not get upon the main if the lights are kept in sight from the deck over the land; but she ought not to come under 10 or 11 fathoms off the pitch of the Foreland, because these depths are only about half a mile from the shore, which is steep in this place, from 10 to 6 fathoms; and from the depths of 6 or 7 fathoms, a ship might ground on the rocks before another cast of the lead could be obtained. The two South Foreland Lights are fixed bright white lights, visible $6\frac{1}{2}$ leagues in clear weather.

WHEN SHIPS are obliged to run from Dover Road to the Downs during very thick weather in the night, when the lights are not seen, it is certainly preferable to borrow towards the main rather than venture near the Goodwin Sand; but in doing so, great caution is requisite, because the soundings are not a *perfect* guide, for the depths decrease a little near the South Sandhead, as well as towards the main.

The best track *appears* to be, to keep along the shore in 11 to 12 fathoms, under easy sail, that soundings may be got exactly, and when round the pitch of the Foreland, it will be prudent to haul up to the northward until a cast of 9 or even 8 fathoms is got, to be certain that the decrease of depth is on the main; but in doing this, care must be taken to heave the lead quick, and on no account ought a ship to borrow under 8 fathoms towards the shore, until she anchors in the Downs.

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Places marked with * have their Latitudes and Longitudes given in the work.—Those marked with † have only their Latitudes given.
Abbreviations. B. Bay—C. Coast—Ca. Cape—G. Gulf—H. Harbour—I. Island—Is. Islands—P. Port—Pt. Point—R. River—Sh. Shoal—N. North—S. South—E. East—W. West.

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SUPPLEMENT TO THE FIFTH EDITION

OF

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VOLUME II.

The following abstracts contain the information which has been received since the publication of the fifth edition of the Directory; and in order to ensure an early circulation of all such new matter, it is intended to issue from time to time similar abstracts in continuation.

SUPPLEMENT.

CHEDUBA, S. W. COAST. (Vol. ii. p. 10.)—The S. W. coast of Cheduba, which has been so imperfectly laid down in our charts, has recently been surveyed by Captain Halsted, of H.M.S. Childers, who gives the following description and sailing directions for the coast, and its contiguous islands and banks:—

"The extreme rocks of the reef, lying off the N. W. point of Cheduba, are in lat. 18° 55½′ N., lon. 93° 26½′ E., bearing from the point N. W. ½ N. 5 miles. From these extreme rocks the reef runs E. by N. 4 miles, having along this line two small islands: Beacon Island, lying East three-quarters of a mile from the extreme rocks, and which has on it a beacon of stones about 60 feet above high-water mark, and which is visible 9 miles; and Sandy Island, not so high as the other, lying three-quarters of a mile from the eastern extreme of the reef, which bears from it N. E. by E. ½ E. Both islands have been planted with cocoa-nut trees.

"The soundings in the neighbourhood of the reef are regular, ranging from 4 fathoms, a quarter of a mile off its northern face, to 8 and 9 fathoms, 3 miles off it; while at that distance off the N. W. and west ends, 16 and 17 fathoms are found. An outlying rock, with 7 feet water on it, is found N. E. by E. of Beacon Island, distant half a mile.

"In the North-east Monsoon the anchorage is good in all these soundings, but the reef affords no shelter from the heavy swell of the South-west Monsoon; at which season the channel between Cheduba and Ramree Islands, after carefully rounding the eastern extreme of the reef, is open and available for that purpose. The tides run East and West along the reef 1¼ knots in the neaps, and nearly 3 knots in the springs, when they sometimes rise 8 feet. They are irregular in time. High water at full and change off the north coast of Cheduba at 9 h. 30 min.

"The North-West Point of Cheduba is a round volcanic hill, 200 feet in height, having casuaringa trees only growing on it. It is connected with the North-west reef by a series of detached rocks, both above and below water, with deep channels between them, through one of which an entrance was found into a small, and, in the North-east Monsoon, good harbour on the north coast of the island. This was named Port Childers; its harbour rock lies S. S. E. from Beacon Island, distant 1¾ miles. This rock is 20 feet high, 50 or 60 yards in length, and is the largest of the rocks in its neighbourhood. From its western side a reef, whose extreme is above water, extends one mile. A quarter of a mile S.S.W. of the harbour rock is a small rock above water, and about a quarter of a mile to the southward and south-eastward of the latter are two sunken rocks forming the northern limit of the entrance channel. This channel, which

runs East and West, has 6 fathoms in its centre, 4 fathoms close to the two northern rocks, and 5 fathoms near the reef forming its southern limit. The reef, from its resemblance to the ribs of a wreck, is named Rib Reef. The channel is half a mile wide, and the land and sea breezes blow directly through it alternately. There is no passage for ships eastward into the Cheduba channel ; but in coming out of the port to the westward, a clear passage exists close to the southward of Rib Reef, but this is not to be recommended. In entering the port, when the N. W. point of Cheduba bears S.S.E., steer E. N. E. until it bears S. by W. The best anchorage will then be found with Sandy Island bearing North in 4 fathoms clay and mud.

" Henry Rock is a detached mass, 35 feet high, visible 6 or 7 miles, and bearing from the N. W. point of Cheduba W. S. W. 2 miles. It is the largest mass off this part of the coast, and marks the position of a considerable reef which surrounds it. There is a narrow channel inside it, but the tides render it very dangerous.

" Throughout the line of coast, the safe limit of approach in ordinary navigation is 20 fathoms by day, and from 60 to 70 by night, the former clearing all the dangers about 2 miles. To the westward and northward of Beacon Island, however, the soundings extend a much greater distance off shore than southward of it, where at a distance less than 10 miles no bottom is found at 120 fathoms, and the coast of Foul Island has little less than 30 fathoms close to it, all round, with the exception of its N. E. point.

" The West Coast of Cheduba has small detached rocks scattered along it, at the distance of less than 2 miles off shore; but these do not prevent the practicability of anchoring in various parts during the North-east Monsoon, when the coast is visited by native craft for rice. This article may be procured in quantity, cheap and good; also cattle, poultry, and fruit. Wood is easily procured, but water not without trouble. There is little inducement, however, to visit this coast, and vessels not bound to its ports would do well to keep clear of it in the South-west Monsoon."

By Captain Halsted's chart a range of hills appears to run parallel to the south-west coast of Cheduba. West Hill, in lat. 18° 47′ N., he describes as 1,300 feet high ; South Peak, near the south extreme of the island, is 1,700 feet in height, and may be seen beyond the limit of soundings to seaward.

As the south point of the island is approached, Pyramid Rock will be seen ; it is a remarkable pinnacle, rising 200 feet out of the water, and lying one mile from the shore ; it bears about W. S. W. from South Peak. Pyramid Rock marks the position of the dangerous reefs to the southward, and between it and Flat Island ; so that, when working along shore to the northward of Hill Island, the Pyramid should never be brought to bear to the northward of N. by E. The indraft between Cheduba and Flat Island is very great.

Flat Island is about 4 miles long from North to South, and is very low, except near its cenre, where there is a volcanic hill about 200 feet in height. It is separated from the south part of Cheduba by a channel varying from 2 to 4 miles in width. Hill Island, which is small and high, lies close to the southward of it, a reef connecting them.

False Island is a small low sandy island, bearing from the volcano of Flat Island E. by S. 5½ miles. It is ordered to be planted with cocoa-nut trees.

West Shoal is a dangerous reef, half a mile in diameter, with very irregular soundings round it. The sea constantly breaks on it, and at low water the points of rocks are seen between the rollers. Rocks extend in a line between this shoal and False Island ; a remarkable one, called Sail Rock, lies about 2½ miles from West Shoal.

Heywood Channel, which takes its name from the late Captain Peter Heywood, runs between the shores of Hill and Flat Islands on the West, and the reefs and rocks extending from West Shoal to False Island on the East. The course through it is N. E. by N. in from 13 to 5 fathoms sandy bottom. There is good anchorage in moderate weather. This channel leads to and from the port of Amherst Harbour, and the secure anchorages inside the islands of Cheduba and Ramree.

Tree Island, in lat. 18° 26′ N., lon. 93° 56′ E., about a mile in length and 250 feet in height, bears from Hill Island S. E. ½ S. 12 miles. A reef of straggling rocks extends from its south point three-quarters of a mile, and detached rocks are found half a mile off its eastern shore. There is also a 4-fathom patch half a mile from its N. W. point. This island and West Shoal form the sea entrance to a second channel leading to the inner anchorages of Cheduba and Ramree Islands. The N.W. limit of this channel, called *Childers Channel*, is the range of reefs between West Shoal and False Island, and its S. E. limit is Tree Island, and a large rocky reef about 3½ miles N. by E. ½ E. Between this reef and the Sail Rock the channel is 4½ miles wide. The course through the fair-way is N. N. E. in from 15 to 9 fathoms water. The superior width and depth and the clear approach to Tree Island, avoiding the danger of West Shoal, seems to give this channel the preference over the Heywood channel. The tides are strong through both.

The Nerbuddah Rock bears S. E. ½ E. from the centre of Tree Island 5 miles. It is a small pinnacle, awash at low water, with a small break of sea on it. Six fathoms are found close round it, and 10 fathoms within a mile. To avoid it from the westward, Tree Island must not be brought to bear to the westward of North. There is a clear channel between it and the southern reef of Tree Island, but it is preferable to round the latter.

Four-Fathom Shoal is an extensive patch of rocks, with very irregular soundings, from 13 to 4 fathoms on it. It bears from the Nerbuddah S. S. E. 7 miles, and the channel between them is clear, but not to be recommended. A heavy swell constantly rolls over the shoal, breaking no doubt in bad weather.

Foul Island.—The reef of rocks off the South Point of this island is generally said to extend 3 miles; Captain Halsted states it to be some few hundred yards in length, and in his chart makes it not more than a quarter of a mile.

William Shoal, according to the same authority, has only 2 fathoms water on its extremes, and from 5 to 7 between them, the shoal being a mile in length East and West.

THE SAYER ISLANDS. (Vol. ii. p. 44.)—There is a dangerous reef of rocks lying about three miles to the eastward of the island, next to the southernmost one of the group. This reef is full half a mile in extent.—(*N. Mag.* 1842, *p.* 664.)

THOUSAND ISLANDS. (Vol. ii. p. 158.)—Pulo Ayer, the southernmost of these, bears S. W. by W. (and not W. by S. as in the charts), according to Captain Johnson of the ship Discovery, and nearly due East from the Hoorn Islands, making the channel through a very crooked one, instead of its being straight, as represented in the charts.—(*N. Mag.* 1842, *p.* 340.)

PULO CEICER DE MER. (Vol. ii. p. 332.)—Mr. Forster, Master of H.M.S. Modeste, states that in passing this island five miles off, they made a smaller island (in addition to the one with two peaks), which was too large to pass under the name of

a rock, and nearly as high as the larger island. As they passed to the eastward, he thinks this *may* join the larger island on the opposite side, but a passage was thought to be seen between them.

HONG KONG. (Vol. ii. p. 390.)—The island of Hong-kong, with its numerous bays and anchorages, has been recently surveyed by Captain Sir E. Belcher and the officers of H.M.S. Sulphur, and the following information is taken from the remarks of Mr. George, the Second Master of that ship, and from the Admiralty chart. The island is generally barren and very mountainous; the highest peak, which is near the N.E. part of the island, has an elevation of 2,000 feet above the sea. There appears to be good anchorage throughout the entire channel on the north side of the island (except in the Lyee-moon Pass, where the water is deep), as well as in Tathong Channel on its east side, and there are several bays and harbours on the south side, besides Tytam Harbour described at page 391, which are frequented by the trading junks.

The British settlement is on the north side of the island, towards its east end, nearly opposite to the peninsula of the main land which forms the west side of Cowloon Bay. The spacious anchorage, called in the Admiralty chart Hong-kong Harbour, is off the settlement, and has good holding ground, with depths varying from 5 to 9 fathoms. It is generally approached from the westward, on which side it is protected by the $3\frac{1}{2}$ fathom bank, called Kellett Bank, which projects upwards of 2 miles from the N.W. point, towards Chunghue. Large ships, having to round the north end of Kellett Bank, should bring the Peak of Lamma Island open to the westward of Green Island, and on a S. $\frac{3}{4}$ E. bearing, which will clear the bank to the westward. This mark should be kept on until Devil Peak (on the main land near Lyee-moon Pass) is in one with the white rock on the south point of Wonchue-chow, which latter mark kept on will clear the bank to the northward; and when the small islet of Hongheong (which lies $1\frac{1}{2}$ miles to the eastward of the settlement) comes on with the highest and eastern peak of the island, bearing S. E. by E. $\frac{3}{4}$ E., that course will lead to the anchorage.

There is a 4-fathom channel between Kellett Bank and Green Island, which may be taken by small vessels by passing to the northward of Green Island, at two cables' distance, and then steering for the anchorage.

There is also a channel inside Green Island, through which H.M. Ships Cornwallis and Sulphur have passed; it has from 10 to 13 fathoms in the middle, shoaling to 8, 6, and $4\frac{1}{2}$ soon after passing the smaller Green Island. As a guide for taking this channel, the northernmost of the two forts on the peninsula may be brought to appear in mid-channel, bearing E. by N. $\frac{3}{4}$ N., which course will lead through to the anchorage.

CANTON RIVER. (Vol. ii. p. 404.)—Captain Maitland, of H.M.S. Wellesley, gives the following directions for the passage to the westward of the Wang-tong Islands:—"Keep the first village seen to the northward of Tycock-tow point open to the southward of the first bluff point above the fort, which has the appearance of an island; this clears the south extreme of the Wang-tong shoal. The east extreme of Tiger Island, open to the westward of the west extreme of the north Wang-tong, clears the shoal to the westward. When to the northward of the Wang-tong, care must be taken of the 16-feet rock."

LEE-O-LOO, or LAE-AO-BAY. (Vol. ii. p. 430.)—H.M.S. Pelican, when within 2 miles of Lee-o-loo Point, observed an appearance of broken water on the lee beam,

the vessel having just steerage-way, and the flood tide setting very strong towards it; stood off immediately, and suddenly shoaled from 15 to 10, 8, 7, 6 fathoms, when it gradually deepened to 13 fathoms.

YUNG-NING, or CHIMMO BAY.—(Pagoda Island), in lat. 24° 38′ N., lon. 118° 36′ E., lies about 4 leagues N.E. of Quemoy. On the north shore of the bay are several villages, three forts, and a large town; there is also a fishing-town on the south shore. The ground is good, and there is shelter from the S.W. round northerly to E.N.E.; but during the North-east Monsoon there is a heavy ground-swell rolling in, and very little shelter should the wind come on from E.S.E. A patch of rocks lies about N.E. $\frac{1}{4}$ N., three-quarters of a mile from Pagoda Island, with deep water close to it; to avoid which a vessel should keep the north shore on-board, as the sea does not break on them, except at low water with a fresh breeze. There is no other danger going in, and the place may be easily distinguished by the Pagoda Hill to the northward of the anchorage. No tide was experienced at the inner anchorage, but at the entrance the tide sets round the north shore about half a knot per hour; the rise and fall appeared to be 12 or 14 feet. There did not seem to be much trade, but several hundreds of fishing-boats go in and out daily. Provisions, such as potatoes, fowls, eggs, &c., are procured by the opium vessels in almost any quantity, at a reasonable price. Water is not easily obtained.

H.M.S. Pelican, in Dec. 1841, anchored in this bay in 7 fathoms, with the Pagoda mountain (in-land and northward of the bay) bearing North; Pagoda Island (near the southern entrance-point) S. by E. $\frac{1}{2}$ E., and the fort at the entrance N.E. $\frac{1}{2}$ E. Mr. Stokes, the master of the ship, who gives these bearings, says, that a much better berth for small vessels would be about 3 cables' lengths, N.N.W. of the above position, where they would be sheltered from the sea, which setting in a-beam of the Pelican made her roll very heavily.

In making Chimmo Bay from the southward, two remarkable hills will be seen northward of the entrance; one round, with a very high pagoda on it, and the other like a saddle. Steer for the latter, until the shipping in the bay can be seen. Care must be taken to give Pagoda Island a good berth, for off it lie two sunken rocks with only 3 feet water on them. The sea breaks on these rocks in blowing weather, and there is a passage between them and the island sometimes used by the small opium vessels. There is also a small rock within the north point visible at half tide; this may be avoided by not running too close to that point.

TSONG-BOO—(Vol. ii. p. 432), according to Mr. Higgs, Second Master of H.M.S. Algerine, is in lat. 24° 51′ N., lon. 118° 58′ E., or allowing the south point of Koo-long-seu island (Amoy) to be 118° 2′ 37″ E., in 0° 55′ 24″ E. of that place, by two chronometers, in nine days' run.

H.M.S. Algerine, when near Ock-seu, on 3rd Dec. 1841, bore up in a heavy gale from N.N.E. and anchored in Tsong-boo Bay in 8 fathoms, soft mud, good holding ground, and well sheltered from all winds from East round northerly to W.S.W.

Tsong-boo promontory is high land, sloping gradually down to the westward, and is joined to a ridge of sand, which is low and stretches out from the high land of Tsong-boo town. It may be easily distinguished from the adjacent land to the northward, being higher, and by the Pyramid Island, which has a small pillar on it. This island lies about a third of a mile from the extreme of the promontory, and bears E. by N.

4 or 5 miles from the anchorage. There is a ledge of rocks off its south end, some of which are above water; they are steep to, and the sea breaks on the outer part of the ledge. The following are the bearings from the Algerine's anchorage:—Pyramid Island E. by N.; Western Point of the bay N.N.W.; Chimmo Hill Pagoda S.W. by W. $\frac{1}{4}$ W.

There did not appear to be any danger between Ock-seu and the Tsong-boo promontory, which is steep to, as no bottom was obtained $1\frac{1}{2}$ miles off with 18 fathoms. There are fishing stakes lying off the bay to the distance of several miles, but they are small and not dangerous.

The Algerine worked along the coast between Chimmo and Chin-chew Bays, in which interval there is no other bay, as represented in some of our charts.

Passage from AMOY to CHUSAN. (Vol. ii. p. 435.)—Ships leaving Amoy for Chusan, during the North-east Monsoon, are recommended by Mr. Stokes, of H.M.S. Pelican, to bear up for the south end of Formosa, taking the outside passage, not only to save time and wear and tear, but also to avoid the many unknown and doubtfully placed islands of the inner passage. Capt. Bourchier, of H.M.S. Blonde, says, that the only mode of making a passage to Chusan against the monsoon is by stretching well off the coast to at least 120° E.; the winds then gradually drawing more to the N.E., will enable a ship to make, northing on the starboard tack.

SAM-SAH ISLANDS. (Vol. ii. p. 435.)—Captain Dundas, of H.M.S. Melville, in standing alongshore to the northward, came in sight of a rocky islet in lat. 26° $10\frac{1}{2}'$ N., lon. 120° 22′ E. From abreast of this island, about 5 miles to the eastward of it, in 34 fathoms water, sand and shells, steering N.N.E. he came very quickly in sight of high bold land, bearing N. $\frac{1}{2}$ E., which afterwards proved to be three large islands. He supposed them to be the Sam-sah Islands, although much farther off the coast than those islands are placed in the charts. It was not till he had passed them, that he could discover them to be three distinct islands. He was near enough to perceive that they were inhabited, and that cattle were grazing on the hills.

TAE-CHOW ISLANDS.—Captain Maitland, of H.M.S. Wellesley, describes a group of islands (called by the natives Tae-chow) in lat. 28° 22′ N., lon. 121° 58′ E. The Wellesley anchored near them on 15th Sept. 1841, during a strong N.E. breeze, and found good shelter. The outer and south-eastermost island bore N.E. by E.; a remarkable round island, near the centre of the westernmost chain, West; Saddle Island, and a fourth island to the N.W. of the outer island, N.N.E.; a cluster of black rocks which shew about 8 feet above high water N. by E., and the N.W. point of the fifth island N. $\frac{1}{2}$ W. The tides are strong, and rise about 15 feet; the ebb comes from N.N.W., and it is high water on the full and change of the moon, at 10 A.M. The soundings are regular and the bottom muddy. When about six miles N.E. of the south-east island, the Hih-shan Islands were in sight from the poop of the Wellesley. The Tae-chow Islands appear to be inhabited and well cultivated.

CHUSAN ARCHIPELAGO. TINGHAE. (Vol. ii. p. 437.)—There is good anchorage for vessels drawing less than 19 feet outside Guard-house Island. Vessels anchoring here should keep the passage between Guard-house Island and Chusan shut in, as the water suddenly deepens farther out.

JUST-IN-THE-WAY.—On a very low spring tide, Capt. Maitland observed a rock bearing S.S.E., 1½ cables from this island. The rock is not visible at ordinary springs.

CHIN-HAE, NING-PO RIVER.—The rise and fall of tide at the entrance of this river, according to Capt. Bourchier, of H.M.S. Blonde, is 10½ feet, and it is high water on the full and change of the moon, at $12^h\ 10^m$ P.M.

H.M.S. Wellesley anchored 1,300 yards N.N.W. of the Joss House, and grounded at half ebb.

Captain Maitland mentions two rocks off the south point of Kin-tang, distant about 2 cables from the land, and visible at a quarter ebb. To clear them, get the peak of Tower Hill Island on with the low north point of Tygoshan, and when past them keep towards the island till well past the Deadman, off the north point of which nearly three-quarters of a mile lies a dangerous rock. Stand on to the N.W. until Passage Island closes on the Triangles, when you may then stand towards them, gradually opening Passage Island till the channel between the Triangles and the main is well open. To clear the rocks in coming from Ning-po, keep the south end of Square Island on with the north extreme of a deep Saddle Hill, on the main land, to the westward of Square Island, till Tower Hill and Tygoshan Point come on as before. The tides are very strong and require great care. Between the Triangles and the main are 14 or 15 fathoms, but you pass over a bank of 5 or 7 fathoms. Keep towards the islands when going into Ningpo River, and when near Passage Island, a small island is seen on the east side of the entrance, near which is the deepest water. When past it, keep in mid-channel, anchoring anywhere off Chin-hae in four fathoms, low water.

BABUYAN ISLANDS. (Vol ii. p. 498.)—Mr. Hoffmeister, Master of H.M.S. Cornwallis, speaks of a very high topping sea (first reported as breakers) experienced by the ship in passing between Lapurip and Calayan; this was almost immediately succeeded by a glassy smoothness. These effects he attributes to a strong N.W. current. A few hours afterwards, when running through the same passage, having bore up for the gale, nothing of this rippling was apparent. He speaks of frequent rising and subsiding of the sea without a corresponding change of weather.

SAMBOANGAN. (Vol. ii. p. 568.)—The anchorage off the town of Samboangan is not good, the bottom being foul and the bank steep, and many ships have lost their anchors there. Immediately in front of the town, in depths between 14 and 18 fathoms, the bottom appears to be composed of large rocks; abreast of either end of the town the ground is considered to be more even. There is a fort at the eastern extreme, and a church at the western extreme of the town. Some think that the anchorage off the fort, in depths of 17 or 18 fathoms, is to be preferred, but as a general rule the coasters affirm that all along this part of Mindanao from point Caldera, the bottom is foul when in deeper water than 12 fathoms. This depth off Samboangan is very close in. A ship with 50 fathoms of chain out will swing into 7 fathoms, and will not be more than half a cable's length from the shoal water, yet there is little danger of driving in that direction, the tides usually running 3 or 4 knots in the direction of the land. Should a ship in swinging foul her anchor she would be certain to drive; it is therefore necessary to moor. From 18 to 20 fathoms the water suddenly deepens to 30 and 35 fathoms, and although this is deep water for ships to bring up in with chain cables, several have done so and have not lost their anchors.

Bullocks, fowls, fruit and yams may be obtained at Samboangan. All except the fruit are dear. The water is excellent and easily procured; it runs behind the beach in a fine stream, but unless filled very early in the morning it is rather thick, the whole female population washing in it every day and stirring up the mud, but it soon settles.

The town of Samboangan contains about 6,000 or 8,000 inhabitants, of whom 20 perhaps are Europeans, chiefly officials. It is said that they muster about 200 soldiers, mostly militia, the others being convicts from Manila, this being a penal settlement. There is also a gun-boat stationed here for the suppression of the Sooloo and Mindanao pirates. The trade of the place is scarcely worth notice.

In connexion with Samboangan the Spaniards have a small fort at Caldera, which is about 7 miles to the westward. Here is said to be a small but secure haven, with steep shores, where ships may heave down or undergo repairs; this they are enabled to do without assistance from Samboangan; no assistance must be expected from thence.—(*N. Mag.* 1843, *p.* 219.)

SANTA CRUZ ISLANDS. (Vol. ii. p. 568.)—In June, 1842, the ship Ann, of Greenock, struck on a reef to the south-westward of these islands. When on shore, the following bearings were taken. Point Caldera N.W.; Sangboys Island W. by S.; easternmost peak of Baseelan S.E. by E.; easternmost Santa Cruz Island E. ¼ N.; western Santa Cruz Island (over which the mast-heads of the ships in Sambangar Road were visible) N.E. ¼ E. Estimated distance from the islands about 4 miles. This, it is thought, is the outer part of the reef. The least water found was 13 feet, and this shoal patch is not above 300 or 400 yards in length, by 100 yards in breadth. Other patches extend from this in the direction of the eastern island. Between the shoal and the west point of the islands there is plenty of water, but to the westward of this point there is another shoal, rather extensive, on which an American ship is said to have struck shortly after the above occurrence.—(*N. Mag.* 1843, *p.* 217.)

THE CAGAYANES ISLANDS. (Vol. ii. p. 572.)—Cavilli Island is wooded with heavy timber, and has a reef extending from it in all parts about three-quarters of a mile. The breakers mentioned at page 572 of the Directory are on a detached reef, having a clear and safe passage between it and the island of 1½ or 2 miles, the entire bearing about W.S.W. from Cavilli Island, and having on it a small sand-bank, or cay, with trees; in other parts also the sand is dry, and of an oval shape, the length being in an East and West direction, and in size similar to Cavilli and its island, about 6 or 8 miles in circumference.—(*N. Mag.* 1842, *p.* 824.)

Westward of Cavilli Island there are two extensive reefs, which I saw and passed near in July, 1841. These reefs are in shape, extent, and direction, exactly similar to those inserted as Goob Bataha. It is reported that these latter have no existence in the position assigned to them, but I cannot speak to the fact, not having crossed the locality. Of the reefs mentioned I made the south end in 8° 45′ N., which it will be observed is nearly a degree northward of Goob Bataha, and my chronometers measured 1° 18′ between the same point and Manookmanookan, which island appeared to agree nearly with Cagayan Sooloo; also 59 miles from thence to the middle of Cavilli Island. From the south point they take generally a north-easterly direction, and seemed about 20 miles in length, by 5 or 6 miles in breadth at the widest part; the southern reef being small in comparison with the northern one, and having a channel of about 1½ miles between them. They are steep coral reefs, forming a perpendicular wall to seaward,

and elevated a foot or two out of the water in some places in which sand has collected; there are also a few black rocks interspersed on them. We only approached the southern of the two reefs near enough to see distinctly its whole extent; the southern one was seen at a greater distance, therefore I cannot pretend to give any particular account of the limit in that direction.—(*N. Mag.* 1842, *p.* 824.)

There is said to be an extensive reef, on which the Golconda and other vessels have struck, nearly midway between the Cagayanes and Point Nasog, the south point of Panay Island.—(*N. Mag.* 1843, *p.* 35.)

SIMIRARA ISLANDS.—Mr. Laird, Master of the barque Chusan, from the information of Capt. Spratly of the Cyrus whaler, mentions three low islands, surrounded by an extensive reef from lon. 121° 30′ E., till near the Caravaos Islands, with a passage between them, and also between them and Semirara; the same reef that the Francis, Charlotte, and Camden were wrecked on in 1839.—(*N. Mag.* 1843, *p.* 35.)

The barque Chusan, on 29th June, 1842, grounded on a reef in lat. 11° 51′ N., lon. 121° 30′ E.—(*Do.*)

APO SHOAL.—W.N.W. from the island; off the outer edge of this shoal 10 or 12 miles, lies a rocky patch with $2\frac{3}{4}$ fathoms on the shoalest part, with a line of soundings of 10 fathoms for some distance; the whole length is about a mile. The boats of the Merope and two London whalers have been on it several times.—(*N. Mag.* 1842, *p.* 286.)

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AMHERST HARBOUR, Martaban. (Vol. ii. p. 27.)—The Honourable Captain Grey, of H.M.S. Endymion, states that a new buoy has been placed on a patch of foul ground outside the *Reef*. This buoy, until generally known, may puzzle strangers running in, and if they pass to the westward of it with a strong flood tide, mistaking it for the *Reef* buoy, they will have great difficulty in gaining the entrance of the river.

BATAVIA. (Vol. ii. p. 156.)—A Time Ball is dropped from a post at the upper end of the Canal at noon, Batavia Mean Time, and also at 1h. 7m. 28s., which is six hours from Greenwich Mean Noon, allowing Batavia to be in 106° 52′ E., or 1h. 7m. 28s.—(*Captain Bethune*, H.M.S. *Conway*, 1841.)

BANCA STRAIT. (Vol. ii. p. 170.)—The high tree, given as a distinguishing mark for the Second Point on the Sumatra Shore, is now altogether removed, or reduced to a mere stump, and is no longer to be looked for as a leading mark.

A wreck with the lower mast-heads above water is reported to lie in 7 fathoms and bearing from Lucepara Island S. by E. 13 or 14 miles.

Nanka Islands. (Vol. ii. p. 171.)—H.M.S. Belleisle anchored here in May 1842, and sent boats for water to the watering-place described as on the N.E. side of Great Nanka. The tide having ebbed, the boats were unable to return to the ship round the S.E. point of the island, by which route they came, and the shoals appeared to extend much farther to the South and East than is indicated by the Directory or the outline of the chart. Mr. Bradley, the Master, who makes these remarks, recommends ships intending to water, to anchor well to the westward near the Little Nanka, and to send their boats round the N.W. instead of round the S.E. Point. The water is good, but much care is necessary to avoid the salt water which flows into it. The Belleisle was watering at Nanka night and day, and only filled 30 tons in 36 hours. This circumstance, together with the distance of the watering-place and the bad landing for the boats, leads Mr. Bradley to advise stopping in preference at Mew Bay when practicable, where better water and a more abundant supply may be much more readily obtained. He also recommends watering at Mew Bay in preference to Singapore; the water being better, more easily obtained, and there being no expense in procuring it. The Nankas appear to abound in wild hogs. The natives are not to be trusted, but on the contrary much caution is necessary, while watering, not to leave the casks, &c., without a sufficient number of men. The Belleisle nearly lost one of her crew by inadvertently leaving him alone for a few minutes.

ANAMBA ISLANDS. (Vol. ii. p. 305.)—Captain Goldsmith, of H.M.S. Hyacinth, asserts that the small islands shewn on the charts between Pulo Domar and Saddle Island do not exist. He describes Saddle Island as having discoloured water $\frac{3}{4}$ of a mile off its N.E. end, with regular soundings of 33 and 35 fathoms, sand and shells, about $1\frac{1}{2}$ miles to the westward of it.

CHINA SEA.—Mr. E. Smith, of the ship Thomas Harrison, mentions a shoal, not having more than 16 feet on it, in lat. 1° 7′ S.; Pulo Tava bearing N. $\frac{1}{2}$ W. and the Seven Islands E. $\frac{1}{2}$ S. As near as he could judge while sailing across it, it was from $1\frac{1}{2}$ to 2 miles long, with irregular soundings, varying between 5 and $2\frac{3}{4}$ fathoms, hard ground.—(*Shipping Gazette*, 1 *July*, 1842.)

RHIO STRAIT. (Vol. ii. p. 202.)—In her passage from Singapore through this Strait in April, 1843, H.M.S. Belleisle grounded near the island of Tercoli. When aground, Tercoli bore from N. by W. to N. W. ½ W., off shore about half a mile; Bintang Saddle N.E. ¾ E.; Beringa E. ¾ S. with the town of Rhio just open of it. The bottom was stiff blue mud, with irregular depths, from 2 to 7 fathoms round the ship. Mr. Bradley, the Master of the ship, says that the south side of Tercoli is shoal, in many places not more than 4 feet water at the distance of two cables from the shore, and recommends ships leaving Rhio to keep the Flag-staff of the upper town open to the southward of the highest part of Beringa until Little Luban bears N.W. by W. ½ W., and then running with that bearing they will clear the shoals. From the soundings which were obtained, he thinks there is no safe passage between Tercoli Island and the Minerva shoal.

CATWICK ISLANDS. (Vol. ii. p. 333.)—The shoal to the south-eastward of Pulo Sapata, which has been considered doubtful, and the report of which has been thought to proceed from the tide ripple (see p. 335 of Vol. ii.) is retained in the Admiralty chart under the name of Hopkins Bank. Its actual position is still doubtful, but it is there placed 10 miles S.E. by S. of Pulo Sapata.

There is also said to be a bank 20 miles E.S.E. of Pulo Sapata, with no more than 14 feet water on it. The Christopher Rawson, of London, is reported to have been lost on this bank.—(*N. Mag.* 1843, *p.* 757.)

CHINA COAST. (Vol. ii. p. 426.)—The following Remarks and Directions for the Coast of China between Amoy and the Yang-tse-kiang have been furnished by Captains Kellett and Collinson, R.N., whose surveys will shortly be published by the Admiralty :—

Shoals near Chapel Island.

Between Chapel Island and the Main are two shoals. The extremes of the southern one bear from Chapel Island S. 60° W. to S. 79° W. The south extreme, having only one fathom on it, is distant 7½ miles. The northern extreme, having 3¼ fathoms, is distant 5½ miles; the direction and extent of the shoal is N.N.E. 3¼ miles. When on the shoalest part, Chapel Island bears N. 60° E. and the Island of Nanting N. 63° W. The northern shoal bears from Chapel Island N. 80° W., distant 8¼ miles; it is formed by a number of pinnacle rocks, which shew at low water spring tides, having deep water between them. Four miles due North of this shoal, with Chapel Island bearing S. 60° E., is the small bay of Ting-tae, which affords shelter for small vessels in the Northern Monsoon; it may easily be known by the flat table head, with three chimneys on it, forming the eastern point of the bay, and the ruin of a wall encompassing a hill above it. The Pagoda of Nan-tae-woo-shan is immediately over this bay, bearing N. 15° W.

Ting-tae Bay.

Amoy Harbour.

Remarks on the Harbour of Amoy, by Captain Collinson, have already appeared in the Directory, Vol. 2, p. 427; the following have been since received.

The channel between the rocks and Woo-seu-shan is five cables wide, with deep water, but it is dangerous for ships in consequence of the chow-chow* water. The passage to the northward and westward of Woo-seu is dangerous, being strewed with rocks.

* *Chow-chow water,* according to Captain Kellett, is a term applied to those ripplings of the water occasioned by the meeting of adverse currents, or other similar causes, the agitation of which is frequently so violent as to render a ship unmanageable when within their influence.

The channel between the island of Koo-long-seu and Amoy is so narrow, that a stranger would not be justified in passing through it until he had anchored and made himself acquainted with the marks. A rock at the entrance of this narrow strait, called Cokers Rock, with only 4 feet on it at low water spring tides, may be avoided by bringing the centre of Hau-seu (Monkey Island) on with a remarkable peak, the highest but one, on the land behind it. When the rock off the south tangent of Koo-long-seu is in line with Pagoda Island, and a pinnacle rock off the eastern extreme of Koo-long-seu is in line with a remarkable tree point on that island, you are on it. From this position, a vessel should keep as close to the Amoy shore as the junks anchored off it will allow. The small island off the City Point has deep water close to it; between this island and Hau-seu is the best anchorage for a ship, having a reef that extends from City Point in a N.N.W. direction lying to the northward of her. Vessels cannot anchor in the strait without great risk of losing their anchors, as the bottom is very uneven. North of the island of Koo-long-seu is a pinnacle rock nearly covered at spring tides, and distant three cables from the shore. The mud dries between this rock and the island. All the points of Koo-long-seu have rocks off them; off the S.W. extreme there is a half-tide rock, 1½ cables from the shore.

To the westward of Koo-long-seu there is a good and safe anchorage in 7 or 8 fathoms. Close to either shore the water is deep, but in the centre there is a bank with from 7 to 9 fathoms on it. Vessels wishing to anchor off the town should use this passage, and by keeping the rocks of the western extreme of Koo-long-seu in line with remarkable sharp peak on the south shore of the harbour until the peaked rock off the north end of Koo-long-seu bears to the southward of East, she will avoid the mud bank and rocks running off that island, and may choose her berth off the city. The channel round the island of Amoy is so narrow and winding, that directions would be useless ; the chart is the best guide. Besides the excellent shelter that this harbour affords, the Chinese have docks for building and repairing their largest junks. Fresh water, and supplies of every description, may also be had, of the best quality and cheap.

Shelter may be obtained under Quemoy, but the entrance is not yet well known or sounded. Quemoy.

N. 74° E. from Chaw-chat, distant 16 miles, is a small indentation of the coast, called Lee-o-loo Bay, where small vessels shelter themselves from the violence of the North-east Monsoon, by bringing the south extreme rocky point of Quemoy in line with Nan-tae-woo-shan Pagoda, and as close as possible to the point forming the eastern head of the bay, in 4 fathoms, sandy bottom, with fair holding ground. There is a village amongst some trees at the head of the bay, with a fort on a bluff to the west-ward of it. The land over it is high and easily distinguished. Lee-o-loo Bay.

E.N.E., five miles from Lee-o-loo Point, is Dodd's Island, called by the Chinese Pak-ting; it is distant from the nearest part of Quemoy 2¼ miles. There appears to be no channel between it and the shore, and a reef extends some distance to the north-ward of it.

N. 35 E., 5 miles from Dodd's Island, is the point of Hoo-e-tow, in lat. 24° 31′ N., and lon. 118° 31′ E. This bay affords good shelter from north-easterly winds. It may be easily known by two very remarkable peaks situated in the bottom of the bay. The Eastern Peak bears from the point N. 45° W. There is a shoal in the centre of the bay, which extends 2 or 3 miles in a W.N.W. direction. This shoal may be Hoo-e-tow Bay.

avoided by keeping a remarkable hill in-land, resembling a dome, open to the southward of the eastern high peak in the depth of the bay. In entering, a vessel should give the point of the bay a berth of at least three-quarters of a mile, for there is a reef running off it on which the water generally breaks. The best anchorage is off Oyster Island, but as vessels do not visit this bay except for shelter, it would be advisable to anchor just inside the point, with it bearing E. by S. or E.S.E. South of Oyster Island there is a ledge of sunken rocks, which at low water have only a few feet on them. To avoid these rocks, keep Oyster Island to the eastward of North. Vessels from the southward intending to anchor should not stand too far into the bay until it is better known; there are overfalls from 10 to 4 fathoms, and there may be less water. The junks go to Amoy by this passage, and the Chinese say there is water for small vessels, but it must be very intricate.

The coast between this and Chimmo Bay is clear of dangers, and the general soundings are from 12 to 15 fathoms. There is no shelter for vessels, but junks anchor under some of the points.

Chimmo Bay.

The small Pagoda Island off the south-eastern point of Chimmo Bay is in lat. 24° 42′ N., long. 118° 42′ E. This bay may be known by a Pagoda (called by the Chinese Ku-sau-tah) on the highest hill in the northern end of the bay. Although vessels lie here throughout the year, it cannot be called a good anchorage, as it is exposed from E. by N. to S.S.E. Vessels entering this bay from the northward must not approach the land nearer than one mile, as there is a rock, which shews at low water, half a mile off shore, on which a vessel called the Fairy struck, and from which it now takes its name.

W. by S., $1\frac{1}{2}$ cables from the rocky islet off the northern point of the bay, is a ledge of rocks, which uncovers at low water, and on which the sea generally breaks. Half a mile W.N.W. of the northernmost rocky island, off the S.E. point, are two sunken rocks; to clear which, keep a remarkable clump of trees in the depth of the bay on with the right shoulder of the high land in the N.W. part of the bay. There are rocks a short way from the beach all round the bay. The best anchorage for vessels is as close to the northern shore as the water will allow; the holding ground is good. There are several very large towns in the bay, and numberless fishing boats; supplies may be had at a cheap rate.

From Chimmo Bay the land stretches to the eastward as far as 119° 10′ E.; it is very much indented, and but little known except to vessels trading to Chin-chew or Tsiuenchan-fu with opium.

Ock-seu Island.

Ock-seu (or Wukiu, probably a contraction of Wukiu-su) consists of three islands; the centre one a barren rock joining the eastern island. The steamer Nemesis anchored under this island. There is a considerable fishing village on it, which is difficult to be seen unless very close. The western island is the largest, and is in lat. 24° 59′ N., lon. 119° 29′ E.

W.N.W. 12 miles is a group of islands, consisting of one large and four small, with a reef to the northward of them, called Soot-zee. These islands were seen from Ock-seu, but not examined.

Lam-yit Islands.

N.N.E. $12\frac{1}{2}$ miles from Ock-seu is the largest of the Lam-yit Islands, called by the Chinese Chung-tung-shan. It is 7 miles long in an E.S.E. and W.S.W. direction. The eastern peak is the highest, being 565 feet above the sea; it is in lat. 25° 12′ N., and lon. 119° 36′ E. There is a remarkable table-land to the south-westward of it, called Powshan. This island is very low and narrow in several places, and has a remarkable

conical hill towards its west end. The channel to the westward of it has not been examined: notwithstanding its barren appearance, it is very populous.

To the northward of the large Lam-yit is a group of small islands, called the Eighteen Yit Islands; between this group and the large island there are numerous rocks and shoals, rendering the bay perfectly useless for shipping. 18 Yit Islands.

N. 81° E., 6 miles from the highest peak of the Lam-yit, is an islet called Cap, which is the south-eastern of the Eighteen Yit. Vessels entering the Hae-tan strait should pass to the eastward of this and of the Double Island, 3 miles to the northward of it, keeping to the westward of a group called the Reef Islands, which bears from the Cap N. 49° E. 5 miles. N.N.E., 4 miles from Double Island, is a remarkable white island with sandy beaches and detached hills; the channel between this and the Reef Island group is foul, having many rocks in it, but it has not been sufficiently examined. After passing to the westward of Sand Island, which has several rocky islets on its N.W. face, a pagoda situated on the point of a shoal bay, with the ruins of a town, will be seen to the westward. Here vessels will have smooth water, protected from the easterly swell by Three Chimney Island, which is the large island immediately to the northward of Sand Island. In the centre of the channel, between this island and the pagoda, the water is deep. The best anchorage is close under the shore of Hae-tan, near to Observatory Island, avoiding a reef to the westward of it, which is nearly covered at high water spring tides. Observatory Island is in lat. 25° 25′ N., and long. 119° 45′ E. Cap Island. Reef Islands.

The passage to the westward of Hae-tan has not been examined through, but as far as the examination has gone, the channel has proved narrow, with a great many dangers, of the approach to which the lead gives no warning. A vessel leaving this anchorage bound to the northward must give the south point of Hae-tan a good berth, as there are several rocks off it.

North 80° East, 5½ miles from the Three Chimneys, and S. 65° W., 7 miles from Turnabout Island, is a very dangerous shoal. Vessels coming from the northward, intending to enter the harbour, after passing Turnabout, should steer for Triple Island, passing within a mile of it, being very careful not to approach the south point of Hae-tan too close. Dangerous Shoal.

Turnabout Island is in lat. 26° 26′ N., and long. 119° 59′ E.; it is distant from the nearest or south-east point of Hae-tan four miles; it has two small islets in its neighbourhood. The channel between it and Hae-tan is safe. Under the eastern point there were several large junks seen at anchor, and a considerable village. Unless this anchorage gives good shelter, there is no bay on the eastern coast of Hae-tan that vessels ought to enter, as they are strewed with rocks and shoals. Under the high peak of Hae-tan, and to the eastward, is a bay that was entered by the surveying vessels, Starling and Plover, in a strong north-easterly wind, out of which they were glad to get, and lucky in having escaped getting ashore; but the entrance into it and the anchorage is full of rocks, with a heavy swell when blowing hard. Turnabout Island.

The high peak of Hae-tan is in lat. 25° 36′ N., and lon. 119° 51′·3 E., and its elevation above the sea 1,420 feet. The north coast and the northern entrance of the straits, as seen from the peak, presented to view many rocks and islands, which would always render the entrance from the northward and the navigation of the straits extremely dangerous. The White Dog Islands bear N. 14° E., 23 miles from the peak of Hae-tan.

The White Dog group, called by the Chinese Pih-keuen, has two large and one smaller island: one mile and a half north-east from the eastern island is a rock, on Pih-keuen, or White Dog Islands.

which the sea generally breaks. Anchorage for ships of any draught may be had under the western island in the North-east Monsoon. A reef of rocks running off from the western extreme of this island, forming a natural breakwater, affords good shelter close under them for vessels under 18 feet draught:—here whole fleets of Chinese junks anchor during foul weather. As the water decreases gradually towards the island, large ships may approach as convenient (keeping in mind that there is 18 feet rise and fall). H.M.S. Cornwallis, Vice-Admiral Sir W. Parker, anchored here for five days with strong north-easterly winds, and rode easy. The bearings from her anchorage were as follows:—West point of north-west extreme, N. ½ W.; village N.N.E.; smallest island, E. ½ S.; 8 fathoms at low water.

A large ship ought to approach the island until the passage between them is shut in by their tangents. One cable off the western point of Village Bay, on the south side of the western island, is a half-tide rock. The channel between the islands is safe, as the dangers shew. The breakwater is in lat. 25° 58′·1 N., and long. 119° 57′ E. The highest peak of the islands is 598 feet above the sea. Fresh water may be obtained here in small quantities. These islands are inhabited by a few fishermen.

River Min. Vessels bound for the river Min from the anchorage under the White Dog Islands should start with the ebb tide. The entrance bears N. 55° W., 8½ miles from the breakwater. When this distance has been run, a good look-out must be kept from the mast-head for Rees Rock (a small black rock, about 20 feet high) on the southern side of the channel, which will be seen bearing N. 71° W., 4½ miles. This will place the vessel about 8 miles from the land. The channel between the breakers is 2 miles across at the entrance, and gradually decreases to half a mile. There is a remarkable sharp peak on the north bank of the river, and a square peak on the south bank nearer than Square Peak; and to the southward of it Round Island will be seen, and to the southward of that is a sharp sandy peak, bearing about S. 68° W. This latter may be mistaken for the sharp peak of the north bank of the river, unless the bearings of the White Dog group be referred to.

Eastward of the north horn of the channel is a dangerous reef, which shews at low water. The bearings on it are Matsooshan Peak, N. 54° E.; Sea Dog, N. 88° E.; W. White Dog Peak, S. 45½° E.; Sand Peak, S. 59° W.; Sharp Peak, N. 71° W.; and Rees Rock in line with the south peak of Square Peak Island. The best mark to keep to the southward of it, and for entering the channel, is to bring Rees Rock in line with Square Peak, bearing N. 81° W. There is a small knoll, with 2¼ fathoms on it at low water, in the centre of the passage; it bears S. 86 E., 3½ miles from Rees Rock, and the above leading mark will keep you clear of it.

Having entered, steer so as to pass one mile North of Rees Rock; the breakers will shew on each side of the channel, if it be near low water at the time, and there is any swell. Should the breakers shew, by skirting the northern shoal a vessel will insure the deepest water. The course from Rees Rock is N. 68° W., on which bearing a remarkable pinnacle rock on the north-east side of Hokeanga is in line with a white battery on the northern shore of the Kinpai Mun. In going up, keep the two islets, called the Brothers, on the face of the island of Hokeanga, in one. This will carry you in mid-channel until you are abreast of Sharp Peak Point, when you can haul up N. 55° W. for Temple Point, which is on the north bank of the river, and will be known by the trees on it.

In the channel without Rees Rock, the depth of water is generally 3 fathoms. Between Rees Rock and Sharp Peak Point, close to the northern breakers, there is

a hole, with 5 and 6 fathoms, where vessels may stop a tide, and find tolerable shelter. Sharp Peak Point may be passed within a cable's length. The bay west of it is shoal, and under the peak the 2 fathoms' line extends nearly one mile from the shore. The mud also extends south-easterly from Hokeanga nearly $1\frac{1}{2}$ mile: vessels beating in this passage must, therefore, keep the lead going.

Woga Fort is a dilapidated circular building on the top of the first hill, on the island west of Sharp Peak. The junks laden with timber lie immediately under it, until the whole convoy is collected, sometimes amounting to 80 sail. S. 17° W., $3\frac{1}{4}$ cables from the Temple (called Hoktow or Fu-tau), is a knoll, with only $2\frac{1}{4}$ fathoms on it. Sharp Peak seen over the lower part of Woga Point will put you on it. From the West Brother the mud extends westerly one mile; on its northern edge is a patch of rocks, which are covered at a quarter flood. The West Brother bears from it S. 74° E., and the Temple N. 12° E. Woga Fort.

From the Temple to Kinpae-mun is not quite 2 miles W.b.S. There are two islets at the entrance of the passage. Pass between them, and keep over towards the south shore to avoid a reef which lies W.b.S. $\frac{1}{2}$ S. from the northern islet. The channel is not quite 2 cables' length wide, and should only be attempted at slack tide, for the *chow-chow* water renders a vessel unmanageable.

Two cables to the westward of Kinpae Point is the tail of a sand-bank, to avoid which keep the southern shore close on board; the distance between it and the edge of the bank being under 2 cables. When abreast of the Ferry House, which is $1\frac{1}{2}$ mile above Kinpae, and on the right or southern bank, edge over to the other shore, passing Wedge Islet at a cable's length. Tree Point will then be seen on the southern bank. A half-tide rock bears N. 9° W., $4\frac{1}{2}$ cables from it. When on it, the Ferry House is in line with Kinpae Point. On the northern shore, after passing Wedge Islet, are two rocky points extending nearly a cable's length from the embankment.

This reach runs S.W.b.S., and N.E.b.N. At the distance of 6 miles from Kinpae-mun, the river narrows again to $3\frac{1}{4}$ cables, the land rising on each side to 1,500 and 2,000 feet. The town of Min-gan is on the left or northern bank of the river, 1 mile within the strait. The river continues narrow for 3 miles, the depth of water being above 12 fathoms, and in some places no bottom at 29 fathoms. Vessels will have some difficulty in getting through this strait with spring tides, unless with a leading wind, in consequence of the *chow-chow* water. Rather more than half a mile above Min-gan, and on the same side of the river, is an islet crowned with a fort.

The banks of the river on each side are steep cliffs with many batteries. At the upper, or south end of the gorge are two islets on the right bank of the river. In going up, leave these islands on your larboard hand, passing close to the northern one of the two, to avoid a shoal patch of $1\frac{1}{2}$ fathoms, which lies 2 cables W.N.W. from the island. Having passed this island, keep along the right bank, gradually hauling up for the pagoda Lo-sing-tah. When you have passed the low point of the island on which it is situated, anchor east of it. S. 12° E. from the pagoda, rather more than 2 cables, is a sunken rock, which shews only at low water spring tides. It is recommended to pass close to the pagoda, if vessels intend proceeding up higher; but as the river is only navigable for vessels three-quarters of a mile beyond the pagoda, and the channel is not only narrow, but the tides are stronger, it would be advisable not to go above it.

Above the pagoda the river turns abruptly to the north-west. The city of Foo-chow-foo is situated on the left bank of the river, 9 miles above the pagoda; the distance

to the city, by the river, from the rocks at the entrance, is not quite 34 miles. Four miles below the city the river is staked half-way across, and the remainder rendered difficult even for junks to pass, by large piles of stone which are covered at high water.

Ma-tsoo-shan Island.

Due north of the Western White Dog is a large island, called Ma-tsoo-shan, and between the two, N. 14° E. from the White Dog, is a precipitous black rock, about 60 feet high, with reefs about it, called the Sea Dog. Between the Sea Dog and Ma-tsoo-shan there are two other reefs, which are never covered. There is also an island off the eastern end of Ma-tsoo-shan, with a reef running off in its eastern point. Shelter may be had under this island from the North-east Monsoon. There is a deep bay on its north-western face, where good shelter may be had from the North-west Monsoon. From the peak of this island the reef at the entrance of the Min River bears S. 54° W., 7¼ miles. In the northern, and also in the western sandy bays, fresh water may be obtained.

Chang-che-shan Island.

North-east, 3 miles from Ma-tsoo-shan, is another large island, called Chang-che-shan, with two very remarkable sharp peaks on it; the highest is elevated above the sea 1,030 feet, and in lat. 26° 14′ N., and lon. 120° 2′ E. The bay on the south side of this island affords good shelter in the North-east Monsoon. Vessels entering from the northward may round the south-eastern horn of it close, and anchor within the point in 6 fathoms.

Vessels bound to the river Min should anchor here, as from this anchorage in the North-east Monsoon they may always get to the bar at the precise moment they require it, but from the White Dogs a vessel will barely fetch. After a little intercourse pilots might also be obtained, as there is a large fishing population on it. The coast inside these islands, and north of the Min (Tinghae Bay), has not been examined; but from Mat-soo-shan Peak several rocks and numerous islands were seen.

On the northern face of Chang-che-shan are several islands, the largest of which bears north 2½ miles. There is no safe passage between these islands.

Trio Rocks.

N. 61° E. from the south-east point of the same island are three peaked rocks, called the Trio Rocks, about 50 feet above the sea, between which and the point is a safe channel. Care must be taken in approaching these islands from seaward to avoid Alligator Island (called Tungsha); it is due east of Mat-soo-shan Peak 24½ miles. From the south extreme of the White Dog Island it bears N. 62° E., 25½ miles; it is in lat. 26° 9′ N., and lon. 120° 26′ E., about 40 feet above the level of the sea, and is a flat barren rock.

Larne Rock and Islet.

N. 56° W., 12½ miles from Alligator Island, is a small rock, called Larne Rock, with one awash 2 cables to the northward of it. It bears from the high peak of Chang-che-shan N. 80° E., and is distant from it 11 miles.

N. 11° E. from Larne Rock, distant 5½ miles, is Larne Islet; it bears from the high peak of Chang-che-shan N. 58° E., 14 miles. It is about 200 feet high, with large boulders sticking up here and there. Near the summit are three houses, and off its northern and southern ends are ledges of rocks. N. 72° W., 7½ miles from Larne Island, and bearing from Chang-che-shan Peak N. 25° E., 11 miles, is another patch of rocks, about 40 feet above the sea.

Tung-yung Peak.

The Peak of Tung-yung bears from Larne islet N. 84° E., distant 14 miles, and is the easternmost island on this part of the coast; the highest part of it is in lat. 26° 13′·2 N., and lon. 120° 31′ E., and elevated above the sea 853 feet. Its appearance is level and flat topped, with steep cliff shores; off its south extreme is a ledge of

rocks. There is another island half a mile to the north-westward of it. They appear, however, as one, except on a N.E.b.N. or S.W.b.S. bearing. Under this island there is good anchorage during the North-east Monsoon. North, half a mile from the eastern point of the western island, is a sunken rock. Tung-yung has a large village and fishing establishment on its western side.

N. 68° W., 20 miles from Tung-yung, is a remarkable conical island; it has a reef off its north-east point; with this exception, the channel between it and the two islands north of it is safe, and 2 miles wide. West of it 4½ miles is a large island (Spider Island), with good shelter from the north-eastern winds on its western side. The highest part of the island is 620 feet above the sea; the other peaks of it are nearly the same height. There is a large village in a bay on the south side of it, and off the south-west point is a reef. On the north-east face of it are four islets, and one on the north-west, between which and Spider Island there is a half-tide rock. To the westward are many islets and rocks. Cone Island. Spider Island.

Four miles north-east of Spider Island is a large island, with two remarkable cones on its northern end, called Double Peak Island; it is 3½ miles long, and its highest peak 1,190 feet high. There is very good anchorage, the best being under its southern point, the two small islands north of Cone Island sheltering you from the eastern swell. Between it and the main there is a good channel, 3 miles wide, whose depth varies from 6 to 18 fathoms. The mainland to the westward of this island is high, with very remarkable conical peaks, and much indented. Water and a few vegetables may be had here. Double Peak Island.

N.E.b.E., 10 miles from Double Peak, is a group of islands called Pih-seang-shan, or Tsih-sing. The northern one is the largest. There is at the south-west angle a small bay, which would afford shelter to two or three small vessels. This is a Chinese vice-admiral's station, and when the surveying vessels visited it, there were three war junks at anchor in the bay. Between the northern and the southern islands of this group there is a safe passage, but the bay is thickly studded with fishing stakes. The northern island is in lat. 26° 42′·5 N., and long. 120° 23′ E. The southern, which is a detached rocky island, is about 60 feet above the sea, in lat. 26° 39′ N. Between this group and the main the average depth of water is 9 fathoms. Pih-seang-shan, or Tsih-sing.

Due North, 12 miles from the Pih-seang-shan group, is a high island, called Fuh-yaou-shan, 1,700 feet above the sea, with a good harbour between it and the main; it is in lat. 26° 56′·1 N., and long. 120° 23′ E. The entrance to the northward is broad and open; the south-eastern channel is only one cable wide. Good water is plentiful and easily obtained here. N. 60° E., 5 miles from Fuh-yaou-shan, is a group of small islands affording no protection, but having no danger near them; and N. 13° E. 5½ miles, is a solitary islet, having a reef off its eastern end. The south-western entrance to Fuh-yaou-shan harbour will probably be found better than the eastern; it has not, however, been yet examined. Fuh-yaou-shan group.

S. 74° E., 10 miles from Fuh-yaou-shan, and N. 45° E., 15 miles from Pih-seang-shan, is a very dangerous rock, over which the sea breaks; it is in lat. 26° 53′ N., and lon. 120° 34′ E. N. 80° E., 16 miles from the eastern point of Fuh-yaou-shan, there is a small group of islands, called Tae-shan (*i. e.* Table Hill); the easternmost large island (remarkable for its table top) is situated in lat. 25° 50′·5 N., and lon. 120° 44′ E., and is 618 feet above the sea. S. 25° W. from Table Island, are two rocky islets, about 100 feet high, and which are almost joined. There is bad shelter to be had between the two largest islands, as close (half a cable or less) to the Table Island Dangerous Rock. Tae-shan, or Table Hill.

as a vessel can with safety go. There is a passage between the two islands, and to the north-east of the western large islands there is a most remarkable mushroom rock, about 260 feet high, and joined to the islands by reefs at low water. There is an indentation on the eastern face of the middle large island, that affords shelter to a number of small fishing junks.

N. 60° E., $7\frac{1}{2}$ miles from Table Island, are three small rocky islets, with several rocks awash near them. Three miles to the N.N.W. of these is another rock, about 50 feet above water, and is remarkable from its being cleft in two. To the westward, between this group and the harbour of Pih-quan, there are also several rocks, which only shew at low water. From the number of rocks and shoals about these islands, all of which may not yet be discovered, it will be necessary for vessels to approach this part of the coast with great caution, or, indeed, to avoid it in this latitude altogether.

Pih-quan Harbour.

N. 45° W., 14 miles from the Tae-shan group, is the island and harbour of Pih-quan; it is in lat. 27° 9′·7 N., and lon. 120° 33′ E., and will afford good shelter in the North-easterly Monsoon for vessels drawing 15 feet.

Three-quarters of a mile East of the south point of Pih-quan, is a rock level with the water's edge, with a reef that is covered, half a cable's length nearly north-west of it.

This roadstead is $1\frac{1}{2}$ mile broad, and has 3 fathoms in it. Fresh water may be got in the sandy bay at the foot of the Three Chimneys on Pih-quan.

Nam-quan Island.

To the westward of the roadstead is the island of Nam-quan, within which is a deep bight, and a walled city. To the northward of it, on the main, is a most remarkable peak, called by the fishermen Pih-quan Peak. The boundary line of the provinces of Chekiang and Fukien passes through Pih-quan Harbour.

Nam-ke-shan.

N. 35° E., distant 30 miles from the Tae-shan group, is a group of islands, the largest of which is called by the Chinese Nam-ke-shan. It consists of one large and fourteen smaller islands; the large island is 737 feet above the sea, and has a good harbour on its south-eastern side in the North-east Monsoon, where there is a good watering place. The eastern horn of the harbour is in lat. 27° 26′·3 N., and lon. 121° 7′ E. Vessels should not pass between the islets which form the south-west part of the group, as there are many reefs which cover at high-water. The westernmost island makes like a cone, and has reefs to the northward. The southern islet is a castellated rock, and is distant from the rest of the group five miles.

W.b.S., 24 miles from Nam-ke-shan, on the main, is an apparently good harbour, and most probably is that called Pepa-shan, on the Admiralty chart.

Pih-ke-shan group.

N.N.E., 10 miles, is a group of islands, the largest of which, called Pih-ke-shan, in lat. 27° 37′ N., and lon. 121° 12′ E. There are four small islets close to it, which protect the anchorage off the south-west end of the island from the easterly swell. Vessels should not anchor under these islands unless from necessity, as they have so much better anchorage either to the northward or southward of them. Fresh water may be obtained. There is an extensive fishing establishment on the island.

West, 11 miles from Pih-ke-shan, is another group of one large and four smaller islands. The largest is called Tungpwan-shan (*i. e.* Brass-basin I.). Between this group and Pih-ke-shan are five detached islets. The main is distant 15 miles to the westward of Tungpwan-shan, the hills rising to 1,000 or 1,200 feet, with extensive plains between them, which are protected from encroachment of the sea by embankments. Between it and the main there are two groups of islands, under which

a fleet of junks, probably from Wanchow-foo, took shelter during a north-easterly gale.

Eight miles N.N.W. from Pih-ke-shan are the Tseigh Islands, of which there are three, the North Tseigh, the South Tseigh, and the East Tseigh, in the space between which there are clusters of rocks, interspersed with reefs, which cover at half-tide. Vessels cannot go between these groups without great risk, as there may be many rocks not yet laid down. The Tseigh Islands form the south extreme of a very large and numerous group of islands; to the northward and westward of these, between them and the Ta-kie Islands, is an excellent anchorage sheltered from all winds, called Bullock Bay. The best entrance into this bay is to the northward of the Tseigh Islands, between them and Pwan-pien-shan. Here water may be procured, and from the natives bullocks of the best description, and in any quantity, may be obtained. Tseigh Islands.

The harbour may be known by a remarkable conical island, called Coin Island, with three rocks near it, which is the north-easternmost of this group, and is in lat. 27° 50′ N., and lon. 121° 15′ E. Coin Island.

W.S.W. of Coin Island is a flat island, with rocks off its south extreme, and two rocky islets to the westward, between which and Tong-tan-shan there is a safe passage in 8 fathoms.

Tong-tau-shan, the largest of the group, and forming the northern boundary of Bullock Bay, is 6 miles in length and 2½ miles in extreme breadth. Its eastern face is high and precipitous. Between it and Pwan-pien-shan there is a junk passage, but it is not available for vessels.

North of Tong-tan-shan there are two large islands, Meaow-shan and Chwang-yung-shan. The channel between them is shoal, having only 3 fathoms. Meaow-shan and Chwang-yung-shan.

Meaow-shan and Chwang-yung-shan are separated by a channel too narrow for a ship. The extent of the two islands is 9 miles.

N. 55° W., 8 miles from Meaow-shan, is the entrance of the Wang-chow-foo River, with an island in the mouth of it. Wang-chow-foo River entrance.

S. 65°, 5 miles from the same island, is a dangerous rocky shoal. The inhabitants of Tung-tan-shan report that the approach to the entrance is very shallow. We found on approaching the main from Meaow-shan that the depth decreased to 4 fathoms.

To the northward of Meaow-shan are two large islands, Hoo-tow-shan and Low-ka, with two small islands between them. The channel between these islands, and that between them and the main, have not been examined. Hoo-tow-shan and Low-ka Islands.

Hoo-tow-shan is remarkable from having two very large high peaks on it. 2½ miles to the southward of Low-ka there are four cliff islets, and half a mile from the south point of it is another islet. The Plover passed between these, and anchored to the westward of a small islet on the S.W. side of Low-ka. In this bay the water shoals suddenly from 19 to 6 fathoms.

N. 75°, E., 17 miles from Low-ka, is the easternmost island of the next group, called Pe-shan, in lat. 28° 5′ N., lon. 121° 32′ E. It is three miles long from East to West, has three rocks on its northern face and two islets on its southern. N.W. from it is a sugar-loaf island, with a small one close to it, and W. by N. 1½ mile is another low level island. Pe-shan group.

Ta-luk-shan is West from Pe-shan 5½ miles. This island is 771 feet high, and affords good shelter on its western side in from 3 to 4 fathoms. On its eastern face is a high and precipitous head. Ta-luk-shan.

Seaou-luk-shan.

Seaou-luk-shan are three islands, 1½ mile south of Ta-luk-shan; between the two the depth of water is 8 fathoms. To the westward of Ta-luk-shan 3 miles is Chin-ke-shan, which has a large and populous town on it. There were better dressed and handsomer women on this island than any other visited by the surveying vessels; they did not shew the least sign of fear, and we were greatly indebted to their assistance in getting poultry, eggs, pigs, &c.

To the northward of Ta-luk-shan 2 miles is another island, which is also populous. Chin-ke-shan faces a deep bay on the main.

N.W., 24 miles from Ta-luk-shan, is a high conspicuous mountain on the main; the sea washes the foot of it, but the entrance into the sound was not explored. To the westward of Seaou-luk-shan 6 miles is Nan-pan-shan, on which is a large and populous village. N. 45° E. 16 miles from Pe-shan is a small island with a reef running off its southern end, and which is the eastern island of a group. It is in lat. 23° 15′·8 N., and lon. 121° 44′ E.

She-tung-mun.

S.W., 2 miles from this island, are four small peaked rocks, with rocks awash between them. West 2¼ miles is the island of She-tung-mun, having many small rocky islets nearly joined to its southern extreme, and a reef to the westward of them. A vessel may get very good shelter under this island unless the wind is to the eastward.

Between this island and Teaow-pung-mun are two islands; the eastern passage of the two is a mile wide and has 3¼ fathoms. N.E. of the centre island are three small islets, with a reef extending from the eastern end of the northernmost.

To the southward of the roadstead are four islets; the largest is called San-she-shan. The channel between them and Main is a mile wide, and has 4½ fathoms through it. The point opposite these islets is called Chin-seu-shan, and forms the S.E. horn of a shallow bay, and is connected with the main by an isthmus occasionally overflowed.

Teaou-pung-mun.

Through the Teaou-pung-mun all the country trade passes, and from the number of towns erected on this barren head-land it would appear that it is a stopping place for the numerous junks that pass. When the Starling anchored in this roadstead there were nearly 100 sail of junks at anchor. They all weighed together and passed through the main to the northward.

Chik-hok Island.

North 6 miles from the easternmost island of the Teaou-pung-mun is the island Chik-hok, in lat. 28° 22′ N., and lon. 121° 44′ E. It is 760 feet high, and bears from the anchorage at the Tai-chows S. 58° W.; it rises abruptly, and has a most remarkable broad yellow stripe on its south-eastern side, forming one of the best leading marks for the coast. There is an islet 1½ mile W.N.N. from it, off the north end of which there is a half-tide rock. Westerly of Chik-hok is a crooked island, under which there may be shelter, but between the two there is foul ground.

Tae-chow Islands.

East of Chik-hok 9½ miles is Hea-chuh-shan, the southernmost island of the Tae-chow group, in lat. 28° 13′ N., lon. 121° 55′ E. This group extends 9 miles in a northerly direction from Hea-chuh-shan; it consists of two large and ten smaller islands. Between the large islands is an excellent harbour, the approaches to which both from the eastward and westward are free from danger. The best anchorage will be found S.E. of the island, lying off the south-western extreme of Shang-ta-chin-shan. The bay to the northward of this is too shoal for anchorage.

Between Shang-ta-chin-shan and the small island 1½ mile to the N.N.E. of it, there is a safe passage. Several watering-places will be found on Shang-ta-chin-shan, but the supply from any one of these is not very abundant.

The southern large island, called Hea-ta-chin-shan, is the highest, its elevation above the sea being 750 feet. It is well inhabited, and bullocks may be obtained here. There are four islands and two reefs to the southward of it. The southernmost island, or Hea-chin-shan, has a remarkable finger rock off its south side. The western rock lies S. 22° W. $3\frac{1}{4}$ miles from the highest part of Hea-ta-chin-shan, and may be seen at all times of tide. N. 41° E., $4\frac{1}{2}$ cables from the above rock, is another reef that covers at high water; it bears from the peak of Hea-ta-chin-shan S. 20° W. $2\frac{3}{4}$ miles.

There is a good channel west of the Tai-chow group, and to the northward of Chik-hok are numerous islands, many of which are joined at low water by mud.

N. 55° W., distant 7 miles from the northern island of the Tai-chow group, are two islands close together that may be mistaken for one, except on an E.N.E. and W.S.W. bearing. Junks take shelter under the western point in strong N.E. winds. Off the N.E. and N.W. points are rocks; a reef also extends off its S.E. end.

Two and a half miles to the eastward of these is another cliff islet, which is the easternmost of the group. The channel between these islands and the Tai-chows is free from danger. The main land is distant 9 miles from the above islands, and the depth of water between the two is from 6 to 3 fathoms, shoaling gradually towards the coast, which is very low, and dries a long way off.

North 10 miles from the northern Tai-chow is the easternmost of a large group of islands, in lat. 28° 42′ N., and lon. 121° 55′ E., called Tung-chuh-seu. Shelter may be obtained under it on its south side, but there is always a heavy swell, which renders landing there very inconvenient. There are several rocks and islands within two miles of its southern, and three islets on its northern face. There are several large islands lying to the N.W., some of which no doubt would afford good shelter, but they have not been yet examined. Tung-chuh-seu group.

Seven miles West, a little southerly from Tung-chuh-seu, lies the island of Chuh-seu, with a sharp cone 670 feet above the sea, over its southern point. Midway between the two, is a cluster of rocks, four in number, and S.S.W. from Tung-chuh-seu are two islets with detached reefs bearing from it East 2 cables, and N. by W. 4 cables. On the same bearing from it, 3 miles, are two islets, with a reef off the eastern end of the southernmost. There is also a solitary cone island, bearing S. 60° E., $2\frac{3}{4}$ miles from Chuh-seu. Good anchorage and a convenient watering place, with an abundant supply of water, will be found under and to the south-westward of the peak of Chuh-seu, in 6 fathoms, between an island with a reef off its N.E. point and Chuh-seu. On the peak at the N.W. end of Chuh-seu is a look-out and three chimneys, from whence they communicate by signals with Tai-chow-foo. The entrance of the river bears S. 88° W. 8 miles from Chuh-seu. The inhabitants reported that vessels of 12 feet draft could not get over the bar except at high water, and that the tide, which rises in the neighbourhood from 18 to 20 feet, would carry a vessel up to the city. The channel between Chuh-seu and the main appears to be shoal, with several rocks covered at high water. Vessels therefore ought to pass to the eastward of the whole group until the inner channel has been examined. South of Chuh-seu are several small islets with safe passages between them. Chuh-seu Island.

There are several rocks and islands to the northward towards Sanmoon Bay, which cannot be now described, not having been sufficiently examined.

N. 62° E. from Tung-chuh-seu, 17 miles, is the Hih-shan group, consisting of three Hih-shan Islands.

inhabited islands, and eight barren rocks. The group extends 4 miles in a North and South direction, and 2 miles East and West. The southernmost island is the largest, and makes like a saddle. It is 320 feet high, and is in lat. 28° 50′·8 N., and lon. 122° 14′ E. The rocks are steep, with remarkable cliffs. The sea has undermined the north-eastern one so much, that it bears some resemblance to a large mushroom. The inhabitants, who are Fokien men, call the island Ung-shan. The depth of water in the vicinity is 20 fathoms. The islands are too small and too detached to afford much shelter, but excellent fish may be obtained from the inhabitants, who are fishermen. There is also a fine stream of water on the island, but it would be difficult of access.

Pata-he-cock. North from the highest of the Hih-shan Islands, and distant 32 miles, is Pata-he-cock, the southernmost of the Kew-shan group. It bears from Cape Montague N. 36° E. $15\frac{1}{2}$ miles.

Cape Montague. N. 25° W., distant 22 miles, is Tan-tow-shan, or Cape Montague, in lat. 29° 10′ N., and lon. 122° 2′ E. It is an island separated from the main by a channel, varying from 1 to $1\frac{3}{4}$ mile wide. The island is 738 feet high, and nearly divided into two parts by a low shingly isthmus. Four miles to the southward of Cape Montague, and nearly attached to the main, is a small islet, with a reef off its eastern point.

Lea-ming. Twelve miles S.S.W. of Cape Montague is Lea-ming, forming the northern and eastern points of San-moon Bay, having a rock off its south-western end.

South of Cape Montague, and 3 miles from the coast, are four islets. The southern one is 9 miles from the Cape ; the others are severally 3, 5, and 7 miles distant from it, with good passages between them to enter San-moon Bay.

San-moon Bay. San-moon Bay will readily be recognized by a remarkable thumb peak, called by the opium vessels that frequent this bay, Albert Peak, and by the Chinese, Ta-fuh-tow. It is about 800 feet high, and is in lat. 29° 5′ N., and lon. 121° 58′ E.

San-chi-san, or Tripple Island. S. 38° W., $2\frac{1}{2}$ miles from Lea-ming, is San-chi-san, or Tripple Island, the depth between the two being 10 or 11 fathoms. Vessels entering, either to stop a tide or driven in by the weather, will find good shelter from the North-east Monsoon to the westward of Lea-ming. Care, however, must be taken in standing into this bay, as it shoals suddenly. If the north peak of Lea-ming is not brought to the southward of East there is no danger ; it is all soft mud in the bay.

Due West of Lea-ming, 6 miles, is a conical island, with a reef off its southern end.

Ta-fuh-tow, or Albert Peak. Ta-fuh-tow, or Albert Peak, is situated on an island to the northward of this half a mile, but the channel between them has many rocks. In the northern extreme of the bay, between Lea-ming and Albert Peak Island, is a small entrance to Sheipoo.

Having rounded the conical island, St. George Island (by the Chinese Ching-shan) will be seen bearing N.W. 4 miles. The bay shoals gradually as you approach it, and the anchorage half a mile south of it is secure in N.E. winds in 3 fathoms. There is a well of good water in the island, but it is neither easily procured nor plentiful ; and vessels in want of water will find it more convenient to anchor to the southward and eastward of Albert Peak, where water may be easily obtained. The bay to the northward of St. George Island is shoal and full of rocks. The isthmus between it and Nimrod Sound is only 7 miles ; there is an entrance into Shei-poo 4 miles to the north of it, which is frequently used by the junks.

Westward of St. George Island, 4 miles, is a group of islands, with many sunken rocks off them. The main land is distant 3 miles to the westward of this group, and

rises immediately from the sea to the height of 900 or 1,000 feet, forming a continuous range of hills along the coast.

Shei-poo Road.

Vessels bound for Shei-poo Roads may pass close to the northward of Cape Montague, and run in due West for the forts, which will be seen on the summit of the island forming the entrance to Shei-poo. North of the roadstead are three islands, and South, 3 cables from the eastern end of the centre island (Wang-che-shan), are the Bangoa Rocks, which always shew; there is deep water close to them. To the westward of Bangoa the water shoals off the centre island to $2\frac{1}{4}$ fathoms 9 cables from the land; to avoid which, do not bring the higher fort to the southward of West.

Bangoa Rocks.

Cliff Island, or Seao-seao.

Cliff Island, or Seao-seao, lies nearly in the centre of the roadstead; off the N.W. end of it anchorage will be found in 4 fathoms, mud. There is always a considerable swell rolling in with a strong wind. Vessels passing between Cape Montague and the main should keep to the eastward of Cliff Island, and pass between it and a rock 7 cables farther to the eastward.

Bay near Cape Montague.

The deep bay on the western side of the cape is shoal, but the S.W. point is steep to. A reef of rocks extends from the westward of Cliff Island, and the channel between it and the main has only 3 fathoms in it. South of Cliff Island is another islet, and the ground between them is foul.

Shei-poo Harbour.

From the roadstead into Shei-poo Harbour there are three entrances; all are very narrow with rapid tides and chow-chow water, rendering the navigation dangerous for ships. Two of them are formed by Tung-mun, the island in which the forts are situated. The third entrance is $1\frac{1}{4}$ mile to the southward of Tung-mun, and is the best of the three. At the entrance to it is a small flat island, with a reef of rocks extending easterly. A vessel should pass to the north-eastward of this island, as there is a reef to the westward between it and the main. The town is situated on the main, forming the north boundary of the harbour. It is walled, but the walls are in a most dilapidated state. The houses and shops are not good. It derives its importance from its being a convenient port for the coasting trade. When in the harbour at high water it has the appearance of a splendid basin, but at low water the mud dries off it a long distance, giving it the appearance of a river.

At the western extreme of the harbour is a narrow passage into San-moon Bay, and midway between this passage and the town is a large island. South of this island is another passage into San-moon Bay.

For the navigation between Cape Montague and Chusan, see Captain Collinson's directions for the Chusan Archipelago. (Vol. ii. p. 437.)

CHUSAN ISLANDS. (Vol. ii. p. 441.)—*South-east Channel, or Hea-ke-moon.*—Captain Tyndal, of the Pylades, recommends the channel to the westward of John Peak rather than the deeper one to the eastward of that island, the channels between John Peak and the island to the westward of it being wider, and there being snug anchorage in case of the wind failing or other casualties.

Sunken Junk in Gough Passage.—A junk is sunk in this passage, and has its mast, shewing 4 feet above water. Marks for it are—extreme of three islands on the flat of Robert Passage, N. 31° W.—summit of Foo-too-shan, S. $21\frac{1}{2}$° W.—Cape Lowang, S. 84° E.—Kittow Point, N. 47° E.

Captain Collinson gives the following Directions for the Yung-keang, or Ningpo River.

(Vol. ii. p. 451.)—The Tahea, or entrance to the Yung-keang, is divided into three channels by the islets called Triangles in Thornton's Chart of 1703.

Southern Channel.

The first danger in the southern channel is a rock, which is covered at half-tide, lying N. 70° E. from the summit of the eastern Triangle, $2\frac{1}{2}$ cables distant. If the inner Triangle, or Passage Island, be kept open of the south point of the outer one, this danger will be avoided.

Having passed the east point of the outer Triangle, keep it, and also the middle Triangle, close on board, to avoid a sunken well, with 8 feet on it, which lies in mid-channel to the southward of the latter. When on the rock, a small islet, 8 miles to the westward of Chin-hae, is in line with the foot of the high bluff beyond it. Then steer to pass a cable's length to the eastward of the inner Triangle, which must not be approached nearer than half a cable, or further than $1\frac{1}{2}$ cables, and keep for the foot of Chung-paou or Jos-house Hill, taking care that the tide does not set you over on the southern side of the river, where the 2 fathoms bank is 5 cables from the shore. The Chung-paou, or Chin-hae, side is steep to, and good anchorage in $3\frac{1}{2}$ fathoms will be found under the hill outside the stakes.

Middle Channel.

The second channel, or that between the middle Triangle and the Inner or Passage Island, is perhaps the best (where all are bad, and should not be attempted, especially at spring tides, without a pilot or local knowledge).

A mud spit extends westerly from the middle Triangle $1\frac{1}{2}$ cables, which will be avoided by keeping the Jos-house on the hill (Chung-paou) open of the west point of Passage Island. Then steer as before, so as to pass 1 cable to the eastward of Passage Island.

Northern Channel.

The channel between Passage Island and Chung-paou Point is the broadest, but has only 2 fathoms at low water.

The only danger is the Tiger's-tail (Hoo-wei-tseao), which is a half-tide rock, lying rather more than one cable N. 40° W. from the highest part of Passage Island. When on it, Peaked Islet (a small islet on the south side of the river opposite to Chung-paou) is in line with River Hill (a remarkable brown peak), bearing S. 16° W. The river is staked across from immediately under the Jos-house Hill to Peaked Islet, through which there are two passages, one of which is close to the latter. The other, which is in the centre of the river, is better ; sunken junks will be found on each side of the opening to the southward of the stakes.

Chin-hae to Ningpo.

From Chin-hae (which will be seen on the north side of the river immediately you are past the Jos-house Hill) to Ningpo the distance is $11\frac{1}{2}$ miles by the river, which is nearly straight, all the reaches, except one, lying to the southward of west, and has an average width of 2 cables. Keep a mid-channel course, and, if drawing more than 13 feet, wait for half-flood, as in one or two places there is not more than $2\frac{1}{4}$ fathoms at low water.

At the city the river separates into two branches, the one taking a N.W. and the other a S.b.W. direction. The latter is only one cable wide, and is crossed by a bridge of boats a quarter of a mile above the junction.

A spit extends off each point at the entrance to the former, which passes close to the city walls, and has a depth of from $2\frac{1}{2}$ to 6 fathoms in mid-channel.

The Jos-house at Chin-hae (Chung-paou) is in

Latitude . . .	29° 57 8″ N.
Longitude . .	121° 43′ 6″ E.
Variation . . .	0 57′ 30″ Easterly, 1841.
High water at full and change	11h. 20m.
Rise and fall	12 feet 6 inches.

The best watering-place at Chinhae is on the south shore, eastward of Peaked Islet.

At Ningpo the river is fresh at the last part of the ebb.

Directions for the North-east part of the Chusan Archipelago, by Lieutenants Milbanke and Nolloth, R.N.

Vessels bound for Shang-hae, and not intending to call at Chusan or Ning-po, should pass to the eastward of the Chusan Archipelago and make the Barren Islands, which lie in lat. 30° 43′ N., lon. 123° 7′ E., from whence the Amherst Rocks, at the entrance of the Yang-tsze-kiang bear N. 58° W. 47 miles. The Barren Rocks are three in number, about 50 feet high, lying nearly East and West, and nearly three-quarters of a mile in extent. To the south-eastward of the eastern rock, distant from it 2 cables, is a rock awash. Barren Islands.

S. 31° W., $20\frac{1}{2}$ miles from the Barren Rocks, is Leuconna, which appears from the southward as three abrupt and round-topped hummocks. Leuconna.

S. 24° W., 20 miles from Leuconna, is Monte Video, or Wong-shing-shan, in lat. 30° 8′ N., lon. 122° 46′ E. It has a bold and precipitous appearance, and nearly square; it has also a remarkable white cliff, which shews very distinctly when the island bears N.W. b. N. Monte Video, or Wong-shing-shan.

N. 74° E., 5 miles from its summit, are seven rocks, called The Seven Sisters; and N. 78° E. 9 miles, are two rocks, called The Brothers. There is a safe passage between these rocks and Monte Video, and also between the rocks themselves; the depth varying from 30 to 4 fathoms in the vicinity of these islands. Sisters and Brothers Rocks.

Westerly from Monte Video is a chain of islands extending to Tae-shan, called Fisherman's Chain. Vessels passing to the eastward of these islands and bound to Chusan or Ning-po, should make Monte Video, pass to the northward of Fisherman's Chain, and between it and the large island of Tchin-sanna. Fisherman's Chain.

The Beehive Rock in this channel bears from Monte Video N. 17° W. 14 miles, and Leuconna S. 69° W. 12 miles; it is about 35 feet high, with a rock awash 3 cables to the eastward of it. Otherwise the depth of water is from 14 to 17 fathoms round it. Beehive.

W. b. N., from the Beehive is the large island of Tchin-sanna, having several smaller islands on its eastern and northern faces. The channel between it and Lae-shan is 5 miles wide, and safe. Tchin-sanna.

Tchin-sanna is $8\frac{1}{2}$ miles long from East to West, having good anchorages in both Monsoons. Having passed Tchin-sanna, vessels will proceed according to the directions given for the Chusan Archipelago, or by those for the passage between Square Island and Shang-hae.

Northward of Tchin-sanna is Peen-chowa. It has several islands round it, and Peen-chowa.

between it and Tchin-sanna; it is next to Tchin-sanna in size, being 6 miles from East to West, and will also afford shelter in either Monsoon. Off its N.E. point, 5 cables distant, is a rock awash.

Chin-tseen-shan and See-seu-sa. The islands of Chin-tseen-shan and See-seu-sa lie to the eastward of Peen-chawa, bearing from the Barren Islands S. 77° W. 17 miles, and from Leuconna N. 21° W. 18 miles.

The two islands of Chin-tseen-shan and See-seu-sa afford very good shelter in both Monsoons. There is fresh water at the eastern end of Chin-tseen-shan.

In the bay on the eastern side of See-seu-sa is a rock which only shews at low water spring-tides. It lies nearly in the centre of the bay. When on it, the highest part of the rock, close to the eastern point of the bay, is in a line with a conical hill over the western point of Chin-tseen-shan. Should vessels be caught at anchor under these islands with a south-easterly wind, they might run through between them, taking care to keep *as close as possible* to the shore of See-seu-sa, as there is a patch of 3 fathoms in the centre of the channel, and three rocks awash farther to the northward.

The bay on the south side of the See-seu-sa is smaller than the other; with deep water at the entrance of it; the best anchorage in it is a little to the eastward of a rocky point which juts out in the centre of the bay.

Childers Rock. Between Leuconna and Chin-tseen-shan is the Childers Rock, which does not always shew. When on it, the peak of Chin-tseen-shan bears N. 90° W.; the Barren Islands, N. 70° E.; and Leuconna, S. 15° E. The lead gives no warning of it, the depths being 24 fathoms close to it.

Saddle Island. Eight miles to the north-westward of Chin-tseen-shan is Saddle Island, and midway between them is False Saddle, forming the northern boundary of the Chusan Archipelago. The two largest of the northern group are saddle-shaped, about 800 feet high, and of similar appearance when seen from the eastward. The northernmost island is in lat. 30° 50′ N., and lon. 122° 41′ E.

Tung-luh-hwa and Seao-luh-hwa. To the south-westward of North Saddle, are the long and narrow islands of Tung-luh-hwa and Seao-luh-hwa, which are scarcely detached. These islands afford anchorage, but not so good shelter as under Tchin-sanna, where vessels ought to stop, should night or thick weather render doubtful the making of the Amherst Rocks, which are distant from the northernmost Saddle Island N. 42° W. 24 miles. Having made and anchored close to the Amherst Rocks, follow the directions given for entering the Yang-tsze-kiang. The tides throughout the group are regular, the flood setting N.W., the ebb S.E.

From Chusan towards Chapoo.

A rock awash at low water spring-tides has been seen about S.S.E., 2 cables from Just in the Way (see Supplement, p. 9), consequently, vessels passing to the southward of that island should be cautious not to approach too close.

Blonde Rock. The Blonde Rock, which shews itself at low water, is three-quarters of a mile to the northward of the Deadman.

Between Chin-hae and Chapoo, and between Chin-hae and Shang-hae.

Middle Ground. N. b. W. $3\frac{1}{2}$ miles from Square Island, is a middle ground, having 2 to 3 fathoms on it. Vessels therefore should approach the Kintang shore, which is steep to; if

beating through this passage, they ought not to bring Square Island to the eastward of South.

There is a passage inside and to the westward of this middle ground, which vessels drawing not more than 15 feet may use; but it is recommended not to do so, as the mud dries off the Chin-hae shore three-quarters of a mile, and the water shoals suddenly. When standing along this shore, a group of small islands lie three-quarters of a mile off shore, and distant from Chin-hae citadel $7\frac{3}{4}$ miles, under which junks frequently anchor for shelter. Four miles farther to the N.W. is a high bluff-head, forming the southern extreme of Hang-chow-foo Bay. This bluff (called Friendly Bluff) will form a remarkable object throughout the navigation of this part of the Archipelago.

N. $\frac{3}{4}$ W., 15 miles from Square Island, is North Island, being the easternmost and largest island of the first group in this direction. It is cultivated, and about 216 feet high, and three-quarters of a mile in extent from East to West. Close to it the water deepens suddenly to 26 and 32 fathoms. The holding-ground is good, but it is too small to afford shelter in strong breezes. North from it is a small rock, which always shews, and the nearest island of the same group bears from it W. $\frac{1}{2}$ N. 4 miles, with a safe passage between them. The islets west of this are called the Seven Sisters (Tsih-tsz-mei), the navigation in their vicinity is dangerous, there being many reefs round and between them. North Island.

Leaving North Island to the westward, the easternmost and highest of the Se-shan group will be seen, bearing north 18 miles from North Island. A vessel beating up between these islands should not bring the high Se-shan to the eastward of North until within 3 miles of it, for there was found a $3\frac{1}{2}$ fathoms patch, with the island bearing N. b. E. The Se-shan Islands form three distinct groups, the easternmost having one large and five smaller islands, with rocks. There is a safe passage between them and the main, which is very low, and continues so to Chapoo. The middle group lies 6 miles W.N.W. of the eastern, and consists of one large and several small islets, the southernmost of which is low and rugged, with reefs round it. There is a safe passage between this group and the main. The western group consists of two islands $11\frac{1}{2}$ miles to the north-westward of the middle group; the larger is about 700 feet high, and has no passage between it and the main. Se-shan Group.

Having made the Eastern Se-shan, pass to the northward or southward of it, as convenient—if to the southward, within 3 miles. Steering westerly from this, pass within 2 miles of the middle group, from which, in clear weather, the high land of Chapoo, bearing west 23 miles, may be seen; also the Fog Islands, a group of low rocky islets bearing S. 75° W. 14 miles. Vessels are recommended to keep well to the northward of the Fog Islands in approaching Chapoo, as by this they will insure a depth of 5 and 6 fathoms, and also if a heavy breeze from the northward come on, can get shelter under the northern shores. Fog Islands.

Chapoo city is situated on the western face of the hills forming the eastern point of Chapoo Bay; from this the land is low, rising again into hills at the distance of 8 miles. The mud runs off a long way from the low land between these hills, whose tops are crowned with buildings. One of the islands also has a large white joss-house on it. Chapoo City.

Pass close to the point of the southern island, within half a mile or less, then steer for the town or the termination of the group of hills, and anchor in 7 fathoms. You will then be about half a mile from the high land to the north-east of the town. The

anchorage is sheltered from E.N.E. to S.S.W. round by the North. At springs, the velocity of the tide is 5 knots, and the rise and fall 25 feet.

About 4 miles south of the southern island, off Chapoo, is a shoal on which the Plover tacked in 3 fathoms, and there is probably less water: should vessels find themselves setting to the southward of this, they must anchor.

Tides. Seven miles S.W. from Chapoo, during a stay of three days, the night tide rose 30 feet, and its velocity was $7\frac{1}{2}$ knots; while at the Fog Islands, 10 miles to the south-eastward, the rise and fall was 17 feet, and the velocity $4\frac{1}{2}$ knots; shewing a rapid increase in rise and velocity as you enter the estuary of the Tsien-tang River, leading to Hang-chow-foo. Captain Collinson, when endeavouring to find a channel to Hang-chow-foo, in the Phlegethon, experienced a tide of $11\frac{1}{2}$ knots when distant 19 miles from the high land of Chapoo and 2 from the shore. On the second trial, at the dead neaps, the tide was running $5\frac{1}{2}$ knots nearly in the same place. In traversing the river from side to side, which at this point is about 15 miles wide, there was no continuous channel found, although there were some deep spots. When the Phlegethon was exposed to this tide she had an anchor down, with a whole cable (having previously lost an anchor and cable in endeavouring to hug up), was under her full power of steam with sails set, and was still driving.

After this account of the tides it will hardly be necessary to urge the necessity of paying particular attention to the set of the ship when navigating through the bay of Hang-chow. This bay cannot and ought not to be navigated at night; the rapidity of the flood setting into the bay caused the loss of the Kite transport in 1840.

Square Island to Shang-hae.

N. 76° E., 9 miles from North Island, and N. 45° W., $3\frac{1}{2}$ miles from Broken Island, is a small group of islands, between which and North Island there is a good channel, and the group itself may be approached as convenient.

N. 50° E. from North Island, distant $9\frac{1}{2}$ miles, is the north-westernmost island of a group called the Volcanoes; it has a reef north of it, and on the highest island of the group there is a most remarkable peak. The channel between this and North Island is safe, if it is kept in mind that you are not to bring East Se-shan to the eastward of North. There are several islands between this group and Tae-shan, but they have not been examined.

Rugged Islands. Continuing on to the north-eastward, the high land of the Rugged Islands will soon be seen. The south-western horn of this group bears from North Island N. 33° E. 24 miles, and from East Se-shan N. 86° E. 13 miles. There is excellent shelter between the S.W. and N.W. horns of this group, during the South-east Monsoon; the whole fleet anchored there in the month of June before proceeding up the Yang-tsze-kiang.

During the North-east Monsoon vessels will find good shelter to the S.W. of the whole group, between it and Tae-shan, but the ground has not been thoroughly examined. The whole space between the Rugged, East Se-shan, Volcano, and North Islands, is safe, having a depth of from 6 to 7 fathoms.

Hen and Chickens. N. 33° E., $3\frac{3}{4}$ miles from the northern horn of the Rugged Islands, is a small islet, with several rocks to the N.W. of it, called the Hen and Chickens; and from the same horn Gutzlaff Island bears N. 43° E. 12 miles. Leaving the Rugged Islands, a vessel may pass on either side of the Hen and Gutzlaff Islands; there is also a safe passage

with 6 or 7 fathoms. Vessels may pass on either side of Gutzlaff Island, but if to the westward of it, it must be very close. It is recommended to pass to the eastward of it, and then steer N. 25° E. for the Amherst Rocks, which are distant from Gutzlaff Island 24 miles, taking care to keep Gutzlaff Island on that bearing; for if the wind is light and it is flood tide, a vessel will be set into the bay of Hang-chow-foo.

Vessels of light draft may navigate the Yang-tsze-kiang with ease and safety, but it will be necessary for vessels above 18 feet to make the Amherst Rocks (which are 20 feet above the sea, and in lat. 31° 9′ N., lon. 122° 24′ E.), and to have beacons placed for them to sail by. Leaving the Amherst and a quarter ebb, a vessel will carry the flood to Woo-sung if there is any wind. Cautions on making the entrance of the Yang-tsze-kiang.

The following courses will insure deep water: from the Amherst Rocks S. 72° W. 14½ miles, but care must be taken that the vessel really makes good this course, and that the flood tide does not sweep her to the northward of that bearing, which is given to clear the Ariadne rocks. The sea breaks on the Ariadne rocks in strong winds and the lowest tides. The bearings from these rocks are, Amherst N. 77° E. 7¼ miles; Shau-e-shan North; Gutzlaff S. 9° W.

After passing the Ariadne, should the north-east break or ripple be seen, it will be the best leading mark, for the deepest water is close to the bank. The course along it will be about N.W. ½ W.; it bears from Shau-e-shan S. 30° W., and is distant from the Amherst Rocks 16 miles. If it is not seen, having run the first course and distance, a course N. 61° W. will take a vessel in mid-channel to Woo-sung; but as the strength and set of the tides will materially affect the ship's course, vessels are recommended to use the ground log both for course and distance. Having run 24 miles on the second course, approach the low western land to one mile; at this time a clump of trees, making like three, will be seen; keep this distance from the bank until a remarkable high tree is seen (if it is clear). At the same time will be seen Paou-shan Point, which is the sharp angle of an embankment; when within a mile of the High Tree Point, increase your distance from the shore, and do not bring Paou-shan Point to the northward of W. by N. ½ N.

The best anchorage off Woo-sung will be Bush Island N.W. b. W.; and Woo-sung village Joss-poles, S. 41° W. in 8 fathoms. The leading mark into Woo-sung is the Joss-poles at the village, S. 41° W.; but the best leading mark will be for a vessel at anchor in the above position to place one of her boats for a beacon. When the low point below the embankment shews clear of Paou-shan Point, close the western or Woo-sung shore to half a cable, where there is good anchorage. Anchorage off Woo-sung.

Proceeding from Woo-sung to Shang-hae, keep the western or left bank on board until you open the second creek on the opposite shore, which will be a mile above the village; then cross over, keep the eastern shore close on board, the channel being in some places scarcely a cable wide. Should the flood run strong, haul over as soon as you have rounded the low point opposite the village. The narrowest part is opposite a low point on the western shore above the batteries. The bank here forms a point, with a remarkable bushy tree on it; it is 7½ miles by the river from Woo-sung village. Woo-sung to Shang-hae.

Having passed this point, keep in mid-channel. Before arriving at the town, which is 5½ miles above it, the river takes a sudden turn to the southward, and the western or right shore again becomes the deep side. The mud extends nearly a cable from the point at the turning; between it and the town shore there is a deep hole with 12 and 18 fathoms, but off the town there are 3½ and 4 fathoms.

MANILA BAY. (Vol. ii. p. 478.)—A buoy has been placed on the St. Nicholas Shoal. It has a white flag on it, with the depth of water on the shoal in feet, $6\frac{1}{2}$, in the centre of the flag.—(*N. Mag.* 1843, *p.* 508.)

CHINA SEA. (Vol. ii. p. 483.)—Mr. Spratly, master of the barque Cyrus, gives an account of a very extensive reef, level with the water, with black rocks near its centre, 20 miles S.W. by W. of the West London Reef. Also a low sand island, covered with bushes, about a mile in extent East and West, in lat. 8° 40′ N., lon. 111° 56′ E., or about 12 miles South of the West London Reef.—(*N. Mag.* 1843, *p.* 697.)

EMBOCADERO, or ST. BERNADINO STRAIT. (Vol. ii. p. 521.)—A dangerous sand-bank is said to exist between the islands of Mesbate and Sibuyan, bearing W.S.W. from Gate Island, distant 7 or 8 miles, a small part dry, and about three-quarter of a mile in extent altogether.

Bearing S.b.W. from this bank, about 8 miles, another patch of shoal water was passed; the depth on it not ascertained, but appearing dangerous.

The little island of Cresta del Gallo, lying about six miles southward of Sibuyan, and placed by Arrowsmith's chart in lat. 12° 5′ N., lon. 122° 37′ E., *does,* it is said, exist. (*N. Mag.* 1843, *p.* 418.)

MACASSAR STRAIT. (Vol. ii. p. 552.)—Mr. Spratly, master of the barque Cyrus, reports a shoal near Cape Temael, about 2 miles in length, E.N.E. and W.S.W., having deep water within a mile of it. He first saw it in April, 1835, and again in 1840, and mentions that Mr. Hey, master of the Eclipse, landed on it, confirming his position of it. It bears, he says, S.W. $\frac{1}{2}$ S. from the South Watcher, and West from Cape Temael. These bearings would place it within about 4 miles of the Cape. (*N. Mag.* 1843, *p.* 131.)

SANTA CRUZ ISLANDS. (Vol. ii. p. 568.)—The Unicorn, C. F. Williams master, on her passage from Manila to Boston in July, 1842, struck on a coral shoal, which extends West from the Santa Cruz Islands to the distance of 7 miles. It was on the extreme of the reef that the vessel grounded, and had while aground $2\frac{3}{4}$ fathoms forward and $5\frac{1}{4}$ fathoms abaft. Western Santa Cruz Island bore E.b.S. $\frac{1}{4}$ S. 7 miles; Fort of Caldera N. $\frac{1}{4}$ E.; Fort of Samboangan N.E.b.E. $\frac{1}{4}$ E.—(*N. Mag.* 1843, *p.* 509.)

APO SHOAL. (Vol. ii. p. 576.)—A rocky patch to the westward of this shoal has already been mentioned in the Supplement (p. 11). Another rocky patch is stated to have been seen and examined by Mr. Hunter, about 14 miles W. $\frac{1}{4}$ N. of the Apo Islands. It is described as about 300 yards in extent, with depths on it varying from 3 to 9 fathoms, and rocky patches of 9 and 11 feet.—(*N. Mag.* 1843, *p.* 417.)

It is remarkable that these banks were not seen by the Company's ships Discovery and Investigator in their examination of the Apo Shoal in 1816.

GILLOLO PASSAGE. (Vol. ii. p. 611.)—There is said to be a bank, having 10 and 11 fathoms on it, about 5 or six miles East of Syaug.—(*N. Mag.* 1843, *p.* 417.)

LOMBOCK STRAIT. (Vol. ii. p. 658.)—The following directions for entering LABOAN TREEANG COVE appeared in the Shipping Gazette :—

The western side of the entrance to the cove is bluff and readily distinguished ; the eastern side is low and sandy, with bamboos and brushwood growing on it. Approaching the entrance, keep nearest to the eastern shore, as a reef runs off the other. A good mark is, to bring the low point about S.b.E., and run in with that bearing ; haul round the east point until it bears about N.N.W. $\frac{1}{2}$ W. or N.W.b.N. and bring up in about 10 fathoms, mud and clay, two, or not more than three cables from the beach. The water here will be quite smooth, although there may be much swell in the entrance.

A reef surrounds the island, with a bush or two upon it, which lies E.S.E.* of this anchorage ; of this be careful, bringing up as advised, putting close to the beach, which is so steep, that 4 fathoms will be found under a boat's stern while she touches the ground forward. This is the best anchorage, unless it be preferred to haul into the eastern side of the cove, which can be done easily and safely.

The fishermen describe the western side of the cove as rocky and not good anchorage, with the exception of a bight, which is well sheltered ; but it is difficult there to obtain water, which is not the case on the eastern side, there being three good wells near the huts. Firewood and bamboos may be cut in plenty, and plantains and cocoa-nuts may be procured ; any other supplies are scarce.

From 50 to 100 sail might be moored in the cove to the eastward, but it is unhealthy during the North-west Monsoon.

PORT DALRYMPLE, Van Diemen Land. (Vol. ii. p. 716.)—Captain Stokes, of H.M. surveying vessel Beagle, has placed a beacon on the shore of Lagoon Bay, which, kept in one with the beacon on the Barrel Rock, forms a good leading mark through the West Channel into the port. The last house (the Rev. Dr. Browne's) on the western shore kept in one with the shore beacon will take a ship through the East Channel, a channel that may be used with safety by vessels making the port in heavy weather when the pilots are unable to get out.

SHOALS NEAR NEW GUINEA. (Vol. ii. p. 751.)—Mr. F. I. King, of the Waterwitch whaler, reports the following banks and dangers discovered by him in his passage westward through St. George's Channel.

ELIZABETH REEF, in lat. 3° 58′ S., and lon. 1° 26′ W. of Cape St. George, the south point of New Ireland. Mr. King landed on this reef, and found it to extend 1$\frac{1}{2}$ mile East and West.

Another reef, shaped like a horse-shoe, in lat. 4° 13$\frac{1}{2}$′ S., lon. 1° 32′ W. of Cape St. George, which breaks very heavily in bad weather; also two others, in lat. 3° 55′ S., lon. 1° 46′ W. of Cape St. George.

HORTON'S BANKS. Two sand-banks, about 3 feet above the level of the sea, one in lat. 4° 32 S., lon. 1° 41′ W. of Cape St. George, and the other about 5 miles W. b. S. $\frac{1}{2}$ S. from it.

GIPPS ISLAND. A round sugar-loaf island, well inhabited and about 3 miles in circumference, and surrounded by a reef, which on the eastern side extends three miles from the island, forming a very good harbour for small vessels. There are hot springs on the island. (Var. 12° 13′ E.)

* The island near the *entrance* of the cove lies W.S.W. of it in the Chart.

VICTORIA AND ALBERT REEFS. The former in lat. 4° 17′ S., lon. 4° 46′ W. of Cape St. George, and the latter in lat. 3° 58′ S., lon. 4° 58′ W. of Cape St. George. Mr. King passed between them in the Waterwitch, and speaks of them as bearing N.E. from *a high island*.—(*N. Mag*. 1844, *p*. 12.)

FERRIER BANK, off the east coast of Australia. Mr. King asserts that this bank exists, and that it lies 18 miles S.S.E. ½ E. from the east end of Cato Reef. He sounded in 17 fathoms on it.—(*N. Mag*. 1844, *p*. 14.)

THE AZORES. (Vol. ii. p. 781.)—Captain Vidal, of H.M.S. Styx, who is now engaged in the survey of these islands, and who has recently examined the position of the FORMIGAS, finds that the bearing of these rocks from the Island of St. Mary as given by Tofino is several degrees in error; the Great Formiga bearing from the Pico Alto of St. Mary N. 41° E. instead of N. 34° E., and from Castella Point of the same island N. 29° E. instead of N. 24° E.

DOLLABARATS SHOAL, which has long been considered doubtful, has been examined by Capt. Vidal, and is now correctly placed. It bears S. 44° E. 3½ miles from the Formigas, and is, according to Capt. Vidal, a most insidious danger, only shewing itself when there is a high swell or sea: the least water found on it was 11 feet at low water.

PORT and COAST of CHITTAGONG.—Notice is hereby given, that in order to facilitate the approach to the Port of Chittagong and the neighbouring Coast to the Southward, a floating Light vessel has been anchored in the following position, where her light is now exhibited, as well as occasional signals during the night.

Latitude 21° 27′ North, Longitude by Capt. Lloyd's Chart of the Sandheads and by observation 91° 45′ East, the centre of the White Cliffs E. by S. ½ S. distant about 17 miles. The distance from the nearest shore about 14 miles, and from the outer or Western Patch about 2 miles.

The Port Master states—

" It will be seen from the above description that the Light can be made use of for either Channel, viz., to the " Westward of or between the Patches. The rollers on the Patches are very heavy, so much so, indeed, that " at the distance of less than a quarter of a mile, one boat was constantly hidden from the other by their rise.

" The Light vessel is anchored in twelve fathoms."

East-India House, London, April 16, 1845.
JAMES C. MELVILL, Secretary.

ARRACAN RIVER.—Notice is hereby given, that a light is now exhibited on the new light-house erected on the Great Savage Rock, at the entrance of the ARRACAN RIVER, in lat. 20° 5′ N., lon. 92° 55′ 38″ E. The light is elevated 106 feet above the level of the sea, and may be seen from the deck of a ship, in clear weather, at a distance of 15 miles. The following directions for entering the Port of Akyab at night, by the aid of this light, and one intended to be placed on a light-house now erecting on Mosque Point, within the river, are published for general information.

AKYAB PORT.—SAILING DIRECTIONS.—Ships sailing for AKYAB during the South-West monsoon should steer for the South end of the Western Bolongo, in lat. 19° 50′ N., lon. 93° 3′ E., then standing along the coast to the Northward and Westward about 5 or 6 miles off shore, until the light is sighted on the Great Savage, at the entrance of the Arracan River, then steer so as to bring it to bear N. by E. or N.N.E., and if they intend to run in during the night, with either of these bearings they will cross the bar in the best water, in 3 fathoms low water spring tides.

After deepening across it, the course should be altered to N. by W. or even N.N.W., according to the state of the tide and sea at the time, to avoid the Western rocks (above water) bearing from the light S.W. ½ S., distant nearly half a mile ; the flood tide sets in on these rocks.

When the light bears East in 6 to 9 fathoms on the edge of the Flat to the Westward, the course must be altered to N.N.E. and N.E. by N., having brought the light to bear S.E. by S. ½ S. the ship will be inside of Passage Rock, which is 5 to 7 feet above water, and bears from the Savage Light N.W. ½ N., distant a quarter of a mile, and should then steer N.E. Easterly, to avoid the Reef projecting from Mosque Point a mile in extent to the South ; some of the rocks are above water at half ebb. There is a red buoy placed on the Southern entrance, in about 9 fathoms, which, with attention, may be seen in a clear night without the moon, and after bringing Mosque Point to bear N.W. by N. to N.W., the ship should anchor.

On Mosque Point a small light-house is nearly finished, the light of which will be a deep red, and will be seen about 6 miles, or 3 miles beyond the bar, as a leading mark to clear the Western rocks, keeping it a little open to the Westward of the Savage Light when steering in or out, also to point out when the ship is inside of the reef off Mosque Point. With this light bearing N.W. by N. to N.W. is good anchorage, having excellent holding ground, and perfectly sheltered from the sea.

A stranger should not attempt to run in at night, particularly in the rains, except at high or low water, as the ebb tide runs very rapidly in strong eddies off the Passage Rock, over the Dangerous Flat to the Westward, and the flood in strong eddies upon the Rocks.

During the N.E. monsoon, ships bound to Akyab, from the northward, should endeavour to make the Table Land of the Western Bolongo in lat. 20° 1′ N., then steering due East they will avoid the Oyster Reef, in lat. 20° 5′ N., lon. 92° 40′ East, which is distant from the Savage Light 15 miles due West. This course is recommended, as although in favourable weather the Savage Light is seen outside the reef in 16 to 17 fathoms water, the depth suddenly decreases, and the probability of hazy or rainy weather would prevent the light being seen, and steering boldly in to sight it, to the Northward of lat. 20° 1′, would endanger the safety of the vessel, by suddenly falling upon the Oyster Rock or Reef before sighting the light-house.

Strangers are advised not to make use of the Channel inside of the Oyster Rock or Reef, on any occasion.

East-India House, London, 9th October, 1844.
JAMES C. MELVILL, Secretary.

MALACCA STRAIT.—The existence of the shoal marked *doubtful* in the charts, midway between the Water Island and the Sumatra shore, is confirmed by several recent reports. The Antelope (drawing 14 feet water) is said to have touched on it, and then to have had several casts of 2½ fathoms on it, hard bottom. The Eldon also touched on it, and Captain Worsell having lowered his boat, sounded across the shoal,

and found the depths decrease from the edge towards the middle of the bank from 17 to 9 feet.

SINGAPORE STRAIT.—The rock on which the Stork was wrecked lies to the south-eastward of the Romania Islands. It is described as about 100 yards in length, and covered at high water to the depth of 10 feet. This vessel grounded on the S.W. part of the rock, and the following bearings were taken from its N.E. end. Barbucit Point S. 76° W. Barbucit Hill N. 70° W. Peak Rock or Outer island N. 57½ W., about three-quarters of a mile. Pedra Branca S. 74° E.

PULO LOZIN. (Vol. ii. p. 321.)—In a letter to the editor of the *Singapore Free Press*, Captain Clark, of the ship William Gillies, mentions having seen these rocks on his passage from Siam to Singapore in October, 1844. He places the East Rock in lat. 7° 17½′ N. and 1° 25½′ E. of the entrance of Siam River. This rock he says is considerably less than Pedra Branca, in Singapore Strait, and may be seen from the deck in clear weather 6 or 7 miles. He saw the Western Rock, but had not an opportunity of examining it; he supposed it to bear from the former about W. by S. 12 or 14 miles.

PULO SAPATA. (Vol. ii. p. 333.)—There is said to be a shoal lying W.N.W. 15 miles from this island.

CORAL REEFS IN THE CHINA SEA.—A reef was seen by Mr. Johnson, commanding the ship Tory, in lat. 7° 52′ N., lon. 111° 26′ E. He describes it as lying in a S.E. and N.W. direction, and to be about 1¾ miles in extent. This appears to be one of the shoals, S.W. of the Owen Shoal, which have been reported by other vessels, and is probably part of the Orleana Reef (see Vol. ii. p. 484), which is stated to be 20 miles in extent.

A rocky shoal, about 2 miles long North and South, is reported by Captain Pearson, of the Bahamian, in lat. 8° 56′ N., lon. 113° 44′ E.; it has rocks above water on its southern edge.

Another shoal is reported in lat. 1° 33′ S., lon. 107° 27′ E., and described as a dangerous shoal, running North and South half a mile, apparently level with the water's edge, and having a rock (or dead tree, many of which were floating about) on its norther n end.

NIMROD SOUND.—Its general direction is E.N.E. and W.S.W. When abreast and to the southward of Bateman 2 miles, the course up the sound will be W.S.W. southerly, and the depths 5, 4½, 4 fathoms up to the Castle Rock, which is 6 miles from the Bateman, and has 3 fathoms close to it, but should not be approached within one mile, for a large shoal or spit from the shore, distant 2¼ miles, extends to Barren Island (which is low) and in most parts dry at low water. The soundings mid-channel from Castle Rock to abreast of Barren Island will be 5, 6½, 7 fathoms. Between Barren Island on the north shore and Nimrod Point on the south shore, the Sound is about 3 miles wide. Nimrod Point (or Bluff) is high, and has several sunken rocks lying about 3 cables off it. E.N.E. from Nimrod Bluff is the Cone Rock. About 4 miles from Nimrod Point higher up the sound lies a small island, which from its central position is called Middle Island, due South of which is the entrance of Medusa Sound. W.S.W. from Middle Island is Parker Island, between which and the opposite shore are 20, 17, and 16 fathoms. Off the east end of that island are dangerous rocks which shew at half tide but are steep to. The channel here is scarcely a mile wide, but has deep water and the tide is strong. S.W. from Parker Island is a small river for boats, having about one fathom at low water; this leads to a small village 3 or 4 miles distant. West of Parker Island and close in towards the

main are several small islands; the first is called Entrance Island, and has abreast of it on the opposite shore extensive mud flats which dry at low water and which should not be approached under 5 fathoms.

From Entrance Island and in a S.W. direction in mid-channel lie the Treble Islands: these in passing up must be left on the larboard hand, keeping in mid-channel to avoid a sunken rock near the island opposite, and which only shews at half tide. Having passed this island, good anchorage may be found off the village of Tung-ju in 6½, 7, or 8 fathoms, mud, with a small island called Middle Island, bearing South and 1½ miles off shore. There was no trade of any consequence apparent in the Sound. It abounds with wild fowl in the winter season.

The southern part of Nimrod Sound is called Ning-hea Bay (?) and is distant 7 miles from the head of the northern part of Shei-poo Gulf. A path running in a south-easterly direction at the foot of a range of lofty hills leads from the former to the latter, but no canal or stream was observed to connect either.—*Capt. The Hon. G. Hastings, H.M.S. Harlequin.*

MADJICOSEMAH or MEIACOSHEMA ISLANDS.—Vessels should not venture near these islands after dark until the dangers have been more closely examined. From the western limit of Hummock Island to the eastern range of the Ty-pin-san breakers is dangerous: independent of the many reefs which connect the islands, the constant strong winds, with haze and rain, during the N.E. monsoon render the approach at that season very hazardous unless in a very clear day.

The islands first visited, viz., Pa-tching-san, and Koo-kien-san, afford several good harbours, and with good charts would be safe to approach. One on the Ke-chee side of Pa-tching-san would shelter a large fleet, but it abounds with patches, which rise suddenly from 10 to 15 fathoms over them, and which are clearly discernible. Except on the northern side of Koo-kien-san, and that just named, watering would be found very difficult, as the reefs extend a great distance from the mouths of the streams.

The Pa-tching-san group numbers ten islands, five only of which possess mountains; the remainder are low islands like the coral islands of the Pacific, and similarly belted with reefs which connect these ten into a distinct group. Besides these, Hummock Island (a high uninhabited mass of rocks) is near the coast, and to the W.N.W. the island of Pseu-bang-yal with its lofty peak and table base. This is probably the Koumi of the charts.

To the eastward we passed between two low islands which are dangerous of approach; we suddenly found ourselves in 7 fathoms, with a heavy swell to the northward of them, but tacked and ran between them as our friend the pilot had advised. I suspect these to be Salumah and Talamah, named by the natives Ty-pin-san, as visible from the summit of Koo-ree-mah.

The islands of the Ty-pin-san group are, Ty-pin-san, Koo-ree-mah, Y-deah-boo, Y-ki-mah, and Fo-ga-mee.

The S.W. angle of Ty-pin-san is situated in lat. 24° 43′ 50″ N., lon. 125° 14′ 54″ E., var. 1° 23′ W. The anchorage of Ty-pin-san is in the hollow of the reef formed by the junction of Ty-pin-san and Koo-ree-mah reefs. Two dangerous reefs lie half a mile off the southern end of the latter island. The anchorage is rocky with sandy patches between, and is not secure in any season. Ty-pin-san should not be approached at all on its northern side, the reefs extending beyond the reach of distinct vision. On the southern side the reef extends about a mile from the land, and vessels might lie to under its lee with a northerly wind until the morning; the drain is southerly. As yet we have not been able to find safe anchorage in the vicinity of Ty-pin-san or its islets.—*Capt. Sir E. Belcher, H.M.S. Samarang.*

BASHEE and BABUYAN ISLANDS.—The group formed by the islands Batan,

Sabtang, Ibayat, Ibugos, Calayan, and Oyabuyan, is termed the BATANAS; the islands are all subject to the Alcalde, who resides at San Miguel.

BATAN ISLAND. San Domingo is in lat. 20° 27′ 26″ N., lon. 121° 57′ E., var. 0° 23′ W. San Vincente (erroneously termed Ivana in the charts) is merely the landing place for the Pueblo of Ivana, which is situated in the S.W. angle of the island, and about one mile from San Vincente, where only a few huts remain.

The islands of Batan and Sabtang are mountainous with many broad cultivated spots. The former is particularly rich in its soil, and produces yams, sweet potatoes, maize, onions, rice, &c. Cattle, sheep, goats, pigs, and poultry are abundant and reasonable. Wood is plentiful as well as water, but the latter is difficult to procure, as the rivers are barred by reefs which prevent boats from approaching or rafting it off in sufficient quantity for ships of war.

SHOAL NEAR KOUMI ISLAND.—In the *Shipping Gazette* of 12th March, 1844, a dangerous shoal is described as having been seen by Capt. Wittingham, of the ship Helen Stewart, extending E. by S. and W. by N., and bearing from Koumi Island S.W. by W. 3½ leagues. In the *Nautical Magazine* for 1844, p. 244, we have a similar description of the same shoal, subsequently confirmed by a letter direct to the editor, at p. 86 of the vol. for 1845. The bearings in this last account differ indeed from the two former, the direction of the shoal being stated as E. by N. and W. by S., and its position N.W. by W., instead of S.W. by W., from Koumi Island; and as this last account is from Capt. Wittingham himself, we must believe it to be the correct one.

BARRERAS BAY, MASBATE ISLAND.—According to Capt. Keene, of the ship Emperor, this is a most treacherous bay, and no vessel ought, in his opinion, to enter it, although it stands so invitingly open in making for the Bernadino Passage. On getting soundings, he had first 20 fathoms, then 4, and in rounding to the ship grounded.—*Naut. Mag.* 1845, *p.* 7.

The following remarks on the West Coast of Borneo are by Captain the Hon. George Hastings, of H.M.S. *Harlequin.*

BORNEO.—Barren Island appears correctly placed, but I make St. Pierre Island about 10 miles farther West, and Cape Datoo to be in lon. 109° 43′ E., lat. 2° 7′ N. Cape Datoo is high, but towards Cape Apee is very low. Apee is in about 109° 21′ E., lat. 1° 58′ N.

From Apee to Datoo the course is E.N.E. northerly 20 miles. From Datoo to Cape Santabong about E.S.E. 44 miles. The latter cape is a very remarkable headland; it is high and uneven, and has on it a narrow perpendicular projection called Santabong Horn, which may be seen at a great distance. The land to the southward is mountainous and is frequently hid by the dense mist which hangs over it.

There are two small islands about S. by E. from Datoo, and two others to the westward of Santabong. From Santabong you haul gradually round to the S.E. for Cape Sepang, which is distant about 9 miles from it. The land then runs in a S.W. direction, and all the land to the eastward is low and covered with jungle to the water's edge, by which you may know when to haul in for the Sarawak River. The land from Sepang to the entrance of the river forms a deep bay, which is very shoal, being dry at low water. The passage lies between this shoal and another to the eastward, about ¾ of a mile wide. We had Santabong Horn on with the extreme land of Sepang, and the highest trees on the low land, forming the left-hand side of the river, going up, bearing S.S.W. in 5 fathoms, which appears to be the entrance of the channel; but attention to the lead is extremely necessary. This channel is about 2 miles off shore, and lies in a S.W. by S. and N.E. by N. direction. On opening the entrance of the river, keep the starboard side on board and an anchorage of 7 or 8

fathoms will be readily found, from which, if bound to Ku-chin, a village about 4 miles up this river, a pilot may be procured. The rise and fall of the tide is 18 feet, and the H.W. at full and change at about 3h. 30m. P.M.

From a fair way off Cape Sepang a N.E. ½ N. course will lead towards Cape Sirik, distant from Sepang about 80 miles, but as the tide sets about this part in an inshore direction, a good look-out for the land, which is very low, is requisite; the lead, however, will guide you by not standing into less than 9 or 10 fathoms.

Cape Sirik is low, with trees to the water's edge, also the land to the eastward until you get into 113° E., when you will see two mountains, called Bateman and Tatow. From C. Sirik to C. Barrain the course is N.E. by E. 180 miles. The coast is generally low, with jungle, and may be approached to 10 or 12 fathoms, the soundings being regular. Cape Barrain is in about 4° 38′ N., lon. 114° 1′ E. Do not approach the cape within 9 or 10 fathoms, as it appears very shoal within these soundings, and in passing in the night a wider course should be taken, for it would be difficult to see the land.

In a fair course from C. Sirik to C. Barrain the soundings will be about 10, 12, 13, and 14 fathoms until nearly abreast of C. Barrain ; the course from this cape is about E.N.E. 68 miles. The land after passing C. Barrain is at first low, but about 30 miles to the E.N.E., the land appears moderately high, when a mount, called the Plantain, will be seen, which is the highest in the vicinity of Borneo Proper.

JAVA SEA.—Mr. Galt, master of the brig Islay, reports a dangerous coral reef with 13 feet water on it, in lat. 7° 16′ S., lon. 114° 44′ E., the S.E. end of Raas Island bearing N.W. by N. about 5 miles.

SHOALS NEAR PANAY.—Until the passage West of Panay is examined, it would be a vain attempt to give definite positions to the dangers from time to time reported, and all that can be done for the present is to record the several reports, by way of caution to navigators. The following dangers, not laid down in the charts, are said to exist in the neighbourhood.

The shoal (Bajo de Panagatan) on which the Marquis of Camden was lost is placed in lat. 11° 50′ N., lon. 121° 22′ E., and there is said to be an island, not hitherto laid down, in lat. 11° 38′ N., lon. 121° 45′ E.—*Naut. Mag.* 1845.

Captain Keene, of the ship Emperor, mentions a mass of coral reefs on the S.W. side of Caravaos (Buffaloes), which, in his opinion, stretch nearly to the Quiniluban Isles.—*Naut. Mag.* 1845.

The *Dry Sand* is described by Captain Isaacson, of the ship Inglis, as a low island, covered with trees and very picturesque.—*Naut. Mag.* 1845.

Sailing directions for the coast of China, from the Cape of Good Hope to Chapel Island, by Captain Collinson, C.B., R.N.

CAPE OF GOOD HOPE.—The Cape of Good Hope is in lat. 23° 14′ N., and lon. 116° 47′ E., forming the western extremity of the Bay of Namoa ; it is about 700 feet above the level of the sea, the highest part having the appearance of a dome.

The eastern face of it is steep to, and in the Bay to the north of it is a green islet with a patch of rocks between it and the Cape. From it, the west point of Namoa bears N.E. by N. 14½ miles, and the S.W. part of the Lamock Islands S. 85° E. 24½ miles.

CONE ISLET.—To the northward of the Cape 2½ miles is Cone Islet, which is distant from the mainland 5 cables; and S. by E., 4 cables from Cone Islet, is a square rock, having a reef, which shews at low water, two cables to the westward of it. Rocks extend from the points on the main opposite to these two islets, and in the channel there are 3 fathoms at low water.

SUGAR LOAF.—From Cone Islet the coast trends N.W. by N. 3 miles to Sugar Loaf Island, from the N.E. point of which there is a reef extending one cable.

RIVER HAN.—From the Sugar Loaf the coast trends to the westward, being the entrance to the River Han, which has $2\frac{1}{2}$ fathoms over the bar at low water.

Intending to enter it, steer so as to pass two cables to the eastward of Double Island (which bears N.W. by N. $\frac{3}{4}$ of a mile from Sugar Loaf); having passed it, the course is West for the town of San-taw-shan, which is upon the north bank of the river, and four miles from Double Island; half a mile to the S.E. of the town there is a depth of 8 fathoms, and at low water the water is fresh.

The channel between Double Island and the main to the northward is five cables wide, the mud extending six cables from that shore, which is low.

ST. JOACHIM BANK.—St. Joachim Bank is an extension of this flat south-easterly. The southern edge in two fathoms bears East from Double Island two miles, and it turns to the northward when the pagoda bears N. 17° E. A good guide to keep clear of it in a vessel of 14 feet draft is to keep Brig Island open of the east end of Fort Island.

PAGODA.—The Pagoda bears N. 8° E. $10\frac{1}{2}$ miles from the Cape of Good Hope. The land in its neighbourhood is so low that when first made it appears like an island.

Fort Island lies N.E. by E. 2 miles from the Pagoda. The Fort is on the Table Land at its western extreme.

KNOLLS at the western entrance to NAMOA.—S. 68° E. from the Pagoda $4\frac{1}{2}$ miles, and with the west point of Namoa in line with Breaker Island bearing N. 36° E. there was formerly a shoal with only 11 feet at low water; at present (August, 1844) there are several knolls, none of which however have less than 13 feet; the following are their bearings:—

The west point of Namoa in line with Breaker Island is the mark for three.

The western upon that line bears from the Pagoda S. 56° E., and has a depth of 13 feet at low water.

Another bears S. 66° E. from the Pagoda with 17 feet.

A third bears East from the Pagoda with 18 feet; and with the Pagoda bearing N. 79° W. and the west point of Namoa N. 21° E. thereis a patch with 18 feet. Also with the Pagoda bearing West and the west point of Namoa N. 23° W. is a knoll which has only 14 feet; all these are sand, and will probably be found to shift in consequence of the freshes from the mouths of the River Han.

BRIG ISLAND (so called from a rock at its southern extremity, which appears like a brig when seen in an East or West direction) lies N.E. by E. $\frac{1}{2}$ E. four miles from Fort Island, the depth of water varying from 5 to $2\frac{1}{2}$ fathoms between the two, the most water being towards the former.

BAYLIS BAY.—Baylis Bay is the first bay on the north side of Namoa, to the eastward of the west point, and has a Chinese fort on the ridge to the westward of it, and an outwork on the beach.

There are three knolls off the bay bearing from the upper fort as follows:—

1st. N. 78° W., rather less than 1 cable from the fort point, having only 5 feet over it.

2nd. N. 43° W., 1 cable from the point, has 9 feet upon it at low water.

3rd. N. 36° W., $2\frac{1}{2}$ cables from the same point; when upon this, Brig Island summit bears N. 40° W., and Fort Island summit S. 75° W.; it has 11 feet at low water.

During the northern monsoon, the opium vessels anchor off this bay, remaining

here from October to May. In the other monsoon, they lie $1\frac{1}{2}$ miles farther to the eastward, as the swell setting round the point renders this anchorage inconvenient.

From Baylis Bay a bank commences, which extends $2\frac{1}{4}$ miles along the N.W. coast of Namoa; the greatest distance from the shore is 4 cables, which is opposite to Stewart's House, off which is the Summer anchorage. The lead gives *no* warning, and there is only 9 feet on the edge of the bank.

The tide at springs runs at the rate of 4 knots, the ebb coming from the eastward. It is high water at full and change days at 11 o'clock; rise, 7 feet.

These two anchorages must be considered more as safe roadsteads than harbours, as, from the velocity of the tide and the fetch of the sea, laden boats would frequently have much difficulty in passing to and fro. Water may be procured with facility, and there was no difficulty in obtaining fresh provisions.

FOLKSTONE ROCK.—The Folkstone Rock has only 5 feet upon it at low water. The bearings from it are: the Brig Rock, in line with the N.W. head of Fort Island, S. 62° W.; Coffin Island, the largest of a cluster of islets 3 miles north of Brig Island, N. 44° W.; and the flagstaff of Stewart's House, in line with a whitewashed rock at the back of it bearing S. 11° E.

SHOALS.—The leading mark, Brig Rock in line with Fort Island, will keep a vessel clear of the shoal, which extends all the way from Brig Island to Breaker Island. The latter bears from the former N. 63° E. $4\frac{3}{4}$ miles, and is a peaked rock with several others about it, which must not be approached nearer than 2 cables upon their western side.

To the eastward of Breaker Isle the shoal water extends a great distance from the northern shore, the southern edge of the Shoal in three fathoms bears East 3 miles from it.

Opposite to Breaker Island the coast line of Namoa trends to the S.E., forming a deep indentation, which is shoal, with two islets and several rocks in it. The land at the bottom of the bay is low, and it is only one mile across to the southern side of the island.

PAGODA BAY.—Pagoda Bay, on the north side of Namoa, is seven miles to the eastward of Breaker Island; there is a walled town at the bottom of the bay, which is the residence of the Governor of the district. Vessels drawing less than 3 fathoms may bring the Pagoda to bear E. by N., but during the northerly monsoon Challum Bay will be found a more eligible anchorage, as with a north-easterly breeze there is a considerable swell into the former, and from Challum Bay you are able to avail yourself of the land wind which usually draws to the northward in the morning.

CHALLUM BAY.—To enter it, pass within a mile to the westward of Middle Islet, which is a barren rock, bearing N. 60° E. $5\frac{1}{4}$ miles from Breaker, or do not shut Back Bay Island in with Entrance Island, which will prevent your standing into less than $2\frac{1}{2}$ fathoms upon the western shore.

Entrance Island bears N.W., $2\frac{1}{2}$ miles from Middle Islet. The anchorage is between the two, in from 3 to 6 fathoms. The bay north of Entrance Island is shoal, and there is a reef extending 3 cables from the S.W. point of Challum Island; the latter lies North $1\frac{3}{4}$ miles from Middle Islet. Should you pass to the eastward of Middle Islet, it must be within 5 cables, as there is an 11 feet patch between it and the Fort Head, bearing from the former N. 48° E. Under Fort Head is a rock, nearly level with the water's edge at high water, and also one in the bay between it and Point Difficult, otherwise the coast line here is steep to

POINT DIFFICULT.—Point Difficult has a square fort upon the highest part of the hills over it, and an islet to the eastward of it.

TERNATE ROCK.—The Ternate Rock, with one foot upon it, lies N. 78° E. $1\frac{1}{4}$ miles from the summit of this islet, on which bearing, it is in line with the third and last sandy hill on the northern part of the range extending from Fort Head. The Pagoda Island in line with Namoa High Peak will place you to the eastward of it. The north point of Namoa has a double peak over it, and forms the eastern boundary of the Pagoda Bay. Rocks extend from its N.E. face 3 cables, the land then trends immediately to the southward.

SOUTH COAST OF NAMOA.—The southern coast of Namoa runs from the west point nearly due East five miles, where there is a small bay, with a pagoda upon its eastern point. This portion of the island corresponds with the bay opposite to the Breaker on the northern shore.

South Bay lies 4 miles to the eastward of the Pagoda Bay, and will afford good shelter in the north-east monsoon. Rocks extend $1\frac{3}{4}$ cables southerly from the eastern point of the Bay. Vessels of 18 feet draft may run into this Bay until the end of the point bears S.E. $5\frac{1}{2}$ cables to the south-eastward of the point is a low flat islet, called Crab Islet by the Chinese. The channel between it and Namoa has foul ground. One mile and a quarter to the eastward of South Bay Point is a bold bluff with three tall chimneys on it, which is the southern extremity of the island.

LAMOCK ISLANDS.—The Lamock Islands are four in number, and two patches of rocks extending in a N.E. and S.W. direction $7\frac{1}{2}$ miles. The south-western part of the group is formed by two square rocks, 15 feet above high water, with several detached reefs between them. The white rock lies N.E. $1\frac{1}{2}$ miles from them, and is sufficiently large to afford a shelter to the fishing boats. Between the white rock and the high Lamock the distance is 3 miles, affording a safe channel, the depth of water varying from 8 to 14 fathoms. High Lamock is 250 feet above the sea and is thickly covered with brush-wood. The channel between it and the next island is $1\frac{1}{4}$ miles; between the two is a rock with a reef which shews at low water, extending $1\frac{1}{2}$ cables southerly from it.

The three northern islets lie close together; the northern one is without vegetation and has a pyramid upon it.

The course from the southern end of the Lamock to the west point of Namoa is N.W. $\frac{1}{2}$ W. $22\frac{1}{2}$ miles, and from the N.E. end of them the east point of Namoa bears N.W. $13\frac{1}{4}$ miles. From the N.E. Lamock the S.E. Brother bears N. 56° E. $25\frac{1}{2}$ miles, and Jokakko point N. 21° E. $19\frac{1}{2}$ miles.

Between the Lamock Islands and Namoa are four islets, the northern of which is the highest, and from its appearance is called Dome Island.

The two southern islets lie nearly East and West of each other; the south-eastern or Reef islet has a reef of rocks extending southerly 1 mile from it, from the south end of which the S.W. islet bears N. $15\frac{1}{2}$° W.

The western islet is lower than the others and flat; its S.W. extreme open of the west end of South-west islet is a good mark for avoiding the above reef.

SINTA is a rock with two feet water on it bearing S. 38° E. $4\frac{1}{2}$ miles from Dome Islet, when on it the S.W. extreme of Reef Islet is in line with the centre of West or Low Islet (called Flat Islet in the chart) bearing N. $67\frac{1}{2}$° W.

S.W. Islet's summit bears N. 72° W.
East point of Namoa, N. $10\frac{1}{2}$° W.
Southern Rock of the Lamocks, S. 28° E.
North end of ditto, East.
Highest point of ditto, S. 71° E.

YING-KONG-TA is another rock awash at low water, $4\frac{1}{2}$ miles to the north of

Sinta. When upon it, the northern end of Crab Islet, on the south face of Namoa, is in a line with the S.W. points of Namoa, bearing N. 77° W. Dome Island bears S. 74° W.; Reef Island, S. 15° W.; High Lamock, S. 37° E.; East end of Namoa, N. 29° W. The north point of Namoa seen clear of the eastern point leads you North of it.

REEF BETWEEN DOME ISLAND AND NAMOA.—There is also a patch of rocks which shew at half-tide between Dome Island and Namoa, bearing from the former N. 12° to N. 27° E. one mile. The Chimney Bluff on Namoa bears N. 33° W. from them; they are rather more than a mile from the Namoa shore. Mr. Anderson, master of the Sir Edward Ryan, also informed me of a reef which he saw when in command of the Times schooner, to the N.E. of the Lamocks, which he described as being just awash; the bearing placed it with all the Lamocks in one, and three miles from the northern rock; we, however, could not find it.

CHELSIEU.—Chelsieu is a cluster of four rocks, which are always above water, bearing East from the north point of Namoa seven miles.

DIOYU.—From Chelsieu Rocks N. 35° W. 3½ miles is Dioyu, a reef, which is just awash at high water. The pagoda, in Pagoda Bay, in line with the Saddle Peak which overlooks the western side of Pagoda Bay in Namoa, bearing S. 63° W. will lead you to the northward of it, should high tides and smooth water prevent its being seen.

Tides at the Eastern extremity of Namoa.—The flood tide enters at the eastern as well as at the western end of Namoa, but the tides in the neighbourhood of Pagoda Bay are not so strong as they are at the western extremity of the island.

General Description of Namoa.—Namoa is 12 miles from East to West, and 5½ miles from North to South at its eastern extremity, which is its broadest part. Notwithstanding its barrenness, it is exceedingly populous, the occupation of fishing affording a livelihood to the greater portion of the inhabitants. The peaks, of which there are three, rise to the height of 1,700 and 1,900 feet above the sea, forming the most prominent landmarks in the neighbourhood. Six and a half miles E.N.E. of Point Difficult is a shallow bay, with a pagoda on an island within it.

CHAUAN BAY.—The west point of Chauan Bay (which is the eastern point of the bay mentioned above) has a small islet off its south extreme. This bay may be useful during the South-east Monsoon, but in the North-east Monsoon vessels should endeavour to reach Owick Bay, which is a smaller bay farther to the eastward, as the other runs far enough back to the N.E. to allow an awkward sea to arise.

At the entrance is a middle ground, with 2½ and 3 fathoms, the south end of which bears N. 88° W. from East Chauan Point, the west end S. 11° E. from Bay Pagoda, and the east end S. 21° E. from the same.

Three cables from the S.W. point of Square Islet (the southernmost island in the bay) is a reef awash at low water. When upon it, the east point of Chauan Bay bears S. 60° E., and the west end of Square Island N. 33° E. The shoal water also extends 1 mile from the north-west side of the bay, which will be detected by the discoloured water.

Anchorage in 6 fathoms will be found with the centre of Square Island bearing S.E., and farther up the bay in 3 fathoms, with the south end of High Island in line with the east point of the Bay.

Between High and Square Islands and the east point of Chauan Bay the channels are too narrow for square-rigged vessels.

OWICK BAY.—Owick or Psyche Bay lies 3 miles to the eastward of East Chauan

Point. It is protected to the eastward by a narrow isthmus, with two rocks off its south extreme, the end of which may be brought to bear S.E., where a vessel will have smooth water in 3½ fathoms.

Immediately to the eastward of Owick Bay is a remarkable sand-hill, which will point out its position.

JOKAKKO PEAK.—Jokakko Peak is the highest part of the land at the back of Owick Bay, and is conically shaped.

BELL ISLAND lies 3 miles to the eastward of Owick Bay Point, and is perforated at its south end, which will be seen in a S.E. or N.W. bearing. There is a smaller islet between it and Jokakko Point, making the channel 5 cables wide, in the centre of which there are only 2½ fathoms: from Bell Island the S.E. Brother bears S. 82½° E. 15½ miles.

JOKAKKO POINT is an isolated hill, N. by E. 1¼ miles from Bell Island; off it are two islets, Cliff Island bearing S.E. by E. one mile, and Square Head N. 76° E. 1½ miles. The channel between them and the point is safe.

CONE PEAK.—N. 36° E. from Jokakko is Cone Peak, with a peaked rock off its eastern point. The land between the two is a sandy plain, very little above high water level, the distance across which to the bottom of Chauan Bay is only 1¾ miles.

BROTHERS.—The south-eastern Brother is the larger of the two, and has a reef extending north-westerly from it. The islets are 2½ miles apart, bearing S.E. ½ E. and N.W. ½ W. from each other; the north-western has a remarkable square top.

TONGSAN (or TUNG-SHAN) HARBOUR.—Tongsan Harbour is one of the best upon the coast of China, and will be easily recognized by a remarkable peak, Fall Peak, making something like a saddle, but with a deeper indentation; and upon the island, at the entrance, is a pagoda, which bears from the S.E. Brother N. 35° W. 14¼ miles.

There is a mud bank outside, having for its least water 4¼ fathoms, bearing from the pagoda S. 40° E., and from Fall Peak S. 35° W. By keeping the Sisters (two islets in the northern portion of the bay) open of the east end of Middle Islets (the group immediately north of Pagoda Island), you will be to the eastward of the bank.

Pagoda Island and the eastern shore of the harbour are steep to, until you open the low isthmus which connects Old Thunder Head with Fall Peak, when the eastern shore becomes shoal; and the larger Sister must not be brought to the westward of N. by W. ½ W.

There are also some rocks extending a cable and a half from the south point of the Middle Islets, and a mud bank extending northerly 1½ cables from its east point. The Plover's first anchorage was in 4½ fathoms, with Fall Peak bearing N. 73° E., and the larger Sister N. 19° W., under a long sandy point, and opposite a creek. Afterwards, for the convenience of watering (water being readily obtained even during the dry season), she was moved under Old Thunder Head, Fall Peak bearing N. 44° E., and the east head of Middle Island N. 52° W.

Junks anchoring for the tide bring up between the Pagoda and Middle Islands. In passing to this anchorage care must be taken to avoid some rocks extending south-easterly 2 cables from the east point of the northern part of Pagoda Island; and the best berth will be found in 12 fathoms, when the Sisters are seen through the western opening of the Middle Islands, You must not close the Middle Islands nearer than 2 cables, as there is a mud bank extending southerly from them. This

anchorage is confined, but will be found convenient for a disabled or an unhandy vessel in case the ebb tide should prevent their reaching the other anchorage; and in the former case, she would be nearer to the town of Tung-yung, where spars are to be obtained. The town is situated upon a peninsula opposite the Pagoda Island. This channel is not a good one to enter by, as rocks extend from both shores, narrowing the channel to 3 cables.

It is high water at 11h. 30m.; rise and fall 12 feet. The Bay runs back N.N.W. 11 miles from Middle Island, where I think there is the mouth of a river, the boat leaving off in 3 fathoms in the channel, but that was very narrow.

Also due West from Fall Peak there is a boat channel leading into Chanan Bay: the north-western portion of the bay is bounded by a range of rugged mountains.

In proceeding to the eastward the coast on the eastern side of Old Thunder Head must not be approached within a cable, as there are three rocks which shew at low water along it.

REES ROCK.—Rees Rock bears S. 65° E. from Fall Peak, distant $1\frac{1}{2}$ miles; when upon it the Chimneys on the island which form Rees Pass bear N. 32° E.

The summit of the eastern islet of that group (S.E. Islet) N. 81° E., there is a rock East of it one cable, which only breaks at low water spring tides. The channel between Rees Rock and the main is used by the junks, but it is narrow and the ground is foul.

REES PASS.—In Rees Pass there is a shoal with $2\frac{1}{4}$ fathoms on it at low water 3 cables from the shore of Chimney Island, bearing from the Chimneys S. 78° W.

The Plover rode out a very heavy gale of wind ranging from N.E. to E. by N., being anchored in 6 fathoms 2 cables from the Black Rock at the southern end of the Sandy Bay under the Chimneys; but I do not think that a vessel will gain any thing by going through the Pass, as immediately on clearing the north end of Chimney Island you are exposed to the same sea that you would experience to the eastward of the group. Anchorage will also be found under South East Island in 5 or 6 fathoms with the south point bearing East.

WRECK ISLAND.—Wreck Island lies 6 cables to the N.E. of South East Island; off its eastern end are several rugged rocks, on the outer of which the Simplicia went to pieces on the 9th of October, 1844, having struck upon a reef which shews at low water, and which lies N.E. one cable of the same rock. In this neighbourhood the sea rises very rapidly after the commencement of a breeze and overtops, leading a seaman to suppose that there must be some change in the soundings.

DANSBORG ISLAND.—Dansborg Island lies 2 miles to the N.E. of Wreck Island: it has three peaks which are nearly of the same height, and is of an oblong shape, being 6 cables in a N.E. and S.W. direction, and $2\frac{1}{2}$ in width. To the W.N.W. of it at the distance of $1\frac{1}{2}$ miles are two smaller islets.

CHING REEF.—Ching Reef bears from the western of the two islets N. 19° W. $1\frac{1}{2}$ miles. It shews at half ebb, and when upon it the following are the bearings:—

N.E. Head of Dansborg Island, S. 51° E.
The Chimneys upon Chimney Island, S. 49° W.
The Awota Rock, S. 72° W.
Black Head, How-tow-shan, N. $10\frac{1}{2}$° E.

It is of some extent, the north-western rocks, which break only at low water, being 2 cables from the highest part of the reef.

GOO REEF.—Goo Reef, which shews at the last quarter ebb, bears S. 69° W. from it. The bearings upon it are:—

The Chimneys on Chimney Island, S. 41° W.
Awota Rock, S. 81° W.
Summit of Wreck Island, S. 35° E.
Western islet of Dansborg Island, S. 82° E.

AWOTA ROCK.—The Awota Rock mentioned above lies close to the main to the N.W. of Rees Pass, bearing N. 53° W. from Chimney Island.

HOW-TOW-SHAN HEAD.—How-tow-shan Head lies 6 miles north of Dansborg Island. It is composed of five separate hills; the southern of which, Black Head, is the most remarkable. Vessels might ride out a strong breeze under it in 4 fathoms, at the distance of 2 cables from the shore, particularly if the wind holds to the northward; should, however, a gale come on, or the wind draw to the eastward, the sooner this anchorage is quitted the better. Under which circumstances refuge may be had by running through Rees Pass, and anchoring close under Chimney Island or passing on to Tung-shan harbour. On the northern of the five hills is a walled town.

HOW-TOW-SHAN RIVER.—How-tow-shan River has deep water when inside, but is not available for navigation without buoys, as the channels are narrow and intricate. A spit extends 3 miles southerly from How-tow-shan, some parts of which are dry at low water; the eastern extreme of it bears S. 68° W. from Black Head.

From HOW-TOW-SHAN to RED BAY.—The coast from How-tow-shan to Red Bay lies N.E., the distance being 10½ miles, and, with the exception of one hill and two hillocks, is a sandy plain. To the eastward, 6 cables from How-tow-shan Point, are some rocks, a portion of which are always uncovered.

SPIRE.—To the N.E. of the point is a rock with a remarkable square column on it, which I have named Spire, and a low flat rock to the westward.

N. by W. 1 mile from Spire is Clift Rock, which must not be approached within 3 cables, as reefs lie off it to the East and N.E.

NOB ROCK.—Nob Rock bears from Black Head East, and from the east head of Red Bay S. 15° W., being 4¾ miles from the nearest shore; it is steep to.

RED BAY.—In working up Red Bay, care must be taken to avoid a reef lying 6 cables N. by E. from the low hill on the shore, 3 miles to the southward of the anchorage. When upon the reef, the eastern Black Rock bears N. 53° E. By tacking when the Black Rocks are in one with the point beyond them, you will be one-third of a mile to the eastward. Red Bay will be readily known by the two black rocks off the point, as well as by the low red sand-hills at the back of it.

A reef extends north-westerly from the southern of the two rocks, leaving a passage only for small boats between it and the main at low water.

S. 55° E.,* 7 cables from the southern Black Rock is a reef which is covered at high water; the anchorage lies between the two, and the reef has 3 fathoms close to it. The water shoals gradually in going in after having passed the rocks.

It will be found a very good roadstead in the northern monsoon; there is a village and a creek at the bottom of the bay.

RED BAY to TING-TAE BAY.—From Red Bay to Ting-tae Bay the distance is 17 miles, the coast trending N.E. by N. It is steep to, with the exception of the N.E. point of Red Bay and of some reefs and a sand spit, which lie west from Lam-tia, and to the southward of a low hill with a house on its summit, where there is a bay in which the water runs a long way back, but it is shallow.

* There is no reef in the Chart in this position, but there is a reef near the shore W.N.W. of Black Rock, which may be the one intended, as the anchorage is between the two.

From Red Bay, Chapel Island bears E.N.E. 21 miles, and Lam-tia N.E. ½ E. 10½ miles.

Directions for Ting-tae Bay and avoiding the Merope Shoals have already been given by Captain Kellett.

In navigating this portion of the coast during the north-east monsoon, the breeze will be found to hang to the northward from 2 o'clock to 10 A.M., and in the eastern quarter the remaining period. Deeply laden vessels will find it more advantageous to seek shelter in one of the harbours or roads above mentioned during a strong north-easterly wind than to keep the sea, as ground can seldom be gained, in consequence of the perpendicularity of the seas.

Position of some of the places mentioned in the foregoing directions.

Place.	Particular Spot.	Lat. N.	Lon. E.
Cape of Good Hope	Summit	23° 14′·02	116° 47′
Lamock Islands	South Rock	23 23·31	117 13·4
	High Lamock	23 15·47	117 17·9
	North Rock	23 17·39	117 19·5
Reef Island	Summit	23 18·99	117 7·6
Dome Island	Summit	23 21·41	117 8·5
Double Island	Centre	23 20·35	116 44·7
Shantowseang	Gate	23 21·43	116 39·9
Pagoda		23 24·51	116 49·07
South Bay	South Point	23 23·77	117 6·5
Baylis Bay	House	23 26·15	116 56·5
Stewart's Ho		23 27·06	116 57·5
West Peak	Summit	23 26·05	116 58·4
High Peak	Summit	23 26·45	117 5·3
Saddle Peak	Summit	23 28·01	117 24·3
Pagoda Bay	Pagoda	23 29·33	117 6·8
Chauan Bay	Summit of Square Island	23 36·53	117 18·3
Owick Bay	S. end of the Point	23 34·54	117 21·8
Jokakko Peak	Summit	23 36·55	117 23·9
Fall Peak	Summit	23 47·15	117 36·8
N. W. Brother	Summit	23 33·75	117 40
S. E. Brother	Summit	23 32·59	117 41·5
Middle Island	Eastern Head	23 45·02	117 32 6
Tongsan	Pagoda	23 44·02	117 32·6
Rees Pass	S. E. Island Summit	23 47·15	117 42·6
Dansborg Island	Centre	23 49·71	117 46·5
How-tow-shan	Black Peak	23 55·37	117 44·1
Nob Rock		23 55·41	117 52·5
Red Bay	Black Rocks	24 1·83	117 52·7

The variation is half a degree easterly.

Coast of China from Hoo-e-tow Bay to Hae-tan Island, by Captain Collinson, R.N.

HOO-E-TOW BAY.—Owing to the uncertain set of the currents in the Formosa Channel, several vessels have mistaken this bay for the Harbour of Amoy. The following remarks will point out the difference in approach.

Dodd Island, called by the Chinese Pak-ting, is in lat. 24° 26′ 6″ N., and lon. 118° 29′ 4″ E., and may be known from Chapel Island by a reef, on which the sea always breaks 3 cables to the N.N.E. of it; the former also is uneven, sloping to the

Entrances of Hoo-e-tow and Amoy distinguished from each other.

eastward. Chapel Island rises suddenly, and there is a difficulty in saying which is the highest part of it; it is 8 miles from the nearest land, Dodd Island being only 3. The entrance to Amoy, viz. from Chapel Island to the South point of Quemoy, is 11 miles, but from Dodd Island to Hoo-e-tow Point is only 5 miles. The rocks off the South point of Quemoy are peaked; the reef off Hoo-e-tow Point is flat.

There are two pagodas on Quemoy Point, the land near them extending N.W. by W. and S.E. by E. On Hoo-e-tow Point there is a small obelisk, and the land turns suddenly to the northward.

Hoo-e-tow Bay. Hoo-e-tow Bay will afford very good shelter in the North-east Monsoon, as the point may be brought to bear S.E. by E. in $3\frac{1}{2}$ fathoms, and vessels drawing less than 18 feet may bring it to bear S.S.E.

Reef off Dodd Island. There is a rocky ledge from E. by N. to E.N.E., rather more than a mile from Dodd Island, and on it are two patches, one of which breaks and the other has only one fathom at low water. The eastern extreme of the land seen to the northward bears N. 43° E. from its eastern edge.

North of Dodd Island one mile, and on the same bearing about half a mile, are two rocks, with only 3 feet at low water; and N. 60° W. 5 cables is a reef, which will shew at half tide.

Hoo-e-tow Point. Hoo-e-tow point is low; about 80 feet above the sea, on the hills north of it, is a small fort and a remarkable nob at the north head of the bay as you enter. The reefs extend S. 40° E. 3 cables from the point; also from the first point, inside, they extend westerly rather more than 2 cables.

Oyster Island and Rock. Oyster Island is a low flat rock, N. 47° W., 2 miles from the point. Vessels running in for shelter will find smooth water between them, taking care to avoid the Oyster Rock, which shews at low water spring tides, and bears from the Island S. 2° E. $9\frac{1}{2}$ cables; when on it the obelisk on the point bears E. 27° S.; the fort N. 67° E; and the summit of Flat Island is in line with the left slope of a conical hill in the bottom of the bay, bearing N. 70° W.

Thalia Bank. The East end of Thalia Bank bears W. $\frac{1}{2}$ S., rather more than 2 miles from the point, and N. 16° E. from Dodd's Island; it extends nearly to the White Rocks in the centre of the bay, the East end having on it $1\frac{3}{4}$ fathoms; the West end dries, and the N.E. part of it is steep to, the lead giving no warning.

Anchorage West of Oyster Island. There is anchorage also to the westward of Oyster Island in 5 fathoms; but it must not be brought to bear to the southward of East, as there is a rocky ledge with only one fathom on it 7 cables from the island.

Anchorage off Flat Island. Vessels requiring shelter in a southerly breeze may run up and anchor to the N.E. of Flat Island at the distance of half a mile; it bears W. by N. $5\frac{1}{2}$ miles from Oyster Island. The northern edge of Thalia Bank bears S. 69° E. from Flat Island; do not bring it therefore to the westward of N. 69° W. and keep Oyster Island open to the northward of the fort to avoid the shoals on the northern shore of the bay.

Channel between Thalia Bank and Quemoy. There is a channel between Thalia Bank and Quemoy, but the ground is foul with several reefs, and should not be attempted without the chart or some previous knowledge. A leading course to clear the South end of the banks is the Chimneys on the north point of Quemoy bearing W. by N. until the White Rocks bear N.N.E. when a course must be steered to pass half a mile from the points of the Bays on the Quemoy shore.

At the head of Hoo-e-tow Bay are two remarkable sharp peaks which form good leading marks from the sea. The eastern is 1,390 feet high, and is in lat. 24° 40′ N. lon. 118° 22′ E.

Fresh water can be obtained under the fort at the point.

The ten miles of coast line between Hoo-e-tow and Chimmo Bay is low; the sand-hills being about 300 feet high. There are two walled towns between the two, the southern of which has a small pagoda near it. None of the small sandy bays afford shelter, the boats being all hauled up upon the beach. Six miles from Hoo-e-tow Point and three from Pagoda Island is a peak with three chimneys on it. Coast between Hoo-e-tow and Chimmo Bays.

CHIMMO BAY will be easily recognized by the Keu-sau or Chimmo Pagoda, which is 760 feet above the sea, and is in lat. 24° 43′ N., lon. 118° 38′ E. It is situated $1\frac{3}{4}$ miles from the beach at the North end of the bay.

On the southern side of the bay are two islets, South Island and Pagoda Island, the channel between which and between Pagoda Island and the South point of the bay are full of rocks.

N. 4° W. 6 and 7 cables from South Island are two rocks, which shew at low water spring tides. When on these the East end of Pagoda Island is in line with a flat reef outside the South end of the bay. To pass to the northward of them, keep a large tree half a mile from the beach in the N.W. part of the bay, open to the left of the North fall of a remarkable shoulder peak, which will be bearing N.W., and also when Point Island is in line with the East end of the first point beyond the bay northerly, you will be to the westward of them. From the reef to Point Island is $1\frac{1}{4}$ miles; the latter is steep to, but there is a reef which covers at half tide W. 9° S. 3 cables from it. The water shoals gradually, and vessels drawing 15 feet or more must not bring the Point Island to the southward of E. 9° S. This bay at the best is but a roadstead, and is a dangerous one in the Southerly Monsoon. Rocks.

The walled town of Yung-ning or Englang is situated at the northern side of the bay, and Chimmo on the southern, besides several large villages along its shores, the inhabitants of which do not bear a good character. Towns.

There is a large fleet of fishing boats belonging to this bay, whose nets will be fallen in with 6 miles from the shore all the way from Hoo-e-tow to Chinchew.

The coast towards Chin-chew Bay trends north-easterly. The distance from Point Island to Chin-chew Point being 8 miles. Several sandy bays occur, which afford shelter for junks, but being shoal will only be of service to vessels of their draft. One and a half miles to the southward of Chung-chi Point is a small islet in a bay, with a building like a bell on it. Coast towards Chin-chew Bay.

CHIN-CHEW BAY.—Chung-chi Point is about 400 feet above the sea, and forms the South entrance point of Chin-chew Bay. Sunken rocks extend from it 2 cables to the eastward. It is in lat. 24° 45′ N., and lon. 118° 45′ E.*

The course hence into Chin-chew Bay is North until Cho-ho Pagoda is shut in with Seao-toi, when it may be steered for.

The following directions will take you over the Bar into the anchorage off the Boot sand, and the description and position of the dangers will follow.

Being half a mile to the southward of Passage Island, steer for the South end of Pa-toi, which will be known by its being the highest island in the neighbourhood. When you are within 3 cables of it, edge away to the southward, passing to the eastward of Seao-toi (a low barren islet) at a cable's length; haul to the westward round it, keeping at the same distance from high-water mark. When Seao-toi West Summit is in line with Ta-toi Summit you are in the narrowest part of the channel, which here is barely a cable wide at low water. Having passed Seao-toi, a W.N.W. course will take you up to the anchorage above Pi-sai in mid-channel. By keeping this islet to the westward of N. 73° W., the rock off Cho-ho Pagoda will be avoided; and by not bringing Seao-toi to the southward of S. 62° E., the knee and toe of the Boot will be Directions for crossing the Bar.

* Lat. 24° 46′ N. lon. 118° 46′ by the Chart.

avoided. The outline of this bank is, however, generally visible. The anchorage is North of Pi-sai 1½ miles or 2 miles, where the channel is 3 cables wide.

Rocks off Passage Island.

There are three rocks to the eastward of Passage Island, which cover at high water. The south-easternmost of the three bears E. 8° S. half a mile from the island. There is also a ledge extending from its S.W. point 1½ cables. N. 40° E. from Passage Island are two white rocks, part of which are always uncovered; the channel between the two is unsafe. To the northward of the White Rocks is Tha-kut, an island at high water only, with a large town upon it. There is a sunken rock between them, which bears from the highest part of the northern White Rock N. 17° E., and is distant 5 cables from it; the summit of Ta-toi bears from it S. 71° W.

Anchorage North of the Boot Sand.

Vessels intending to anchor to the northward of the Boot Sand, must steer to pass North of Ta-toi, which is distant 3 miles from Passage Island, and if drawing less than 3 fathoms may run up until Cho-ho Pagoda bears South, where you will be about 1½ miles from the usual anchorage, to the southward of the Boot. The north edge of the Boot will be avoided by keeping the White Rocks, mentioned above, to the southward of East.

With Ta-toi Summit bearing S. 17° E., there is a half-tide rock on the North side, 1½ cables from the shore. There is good anchorage in 3½ and 4 fathoms, with Ta-toi bearing S.E. by S. The Boot may be crossed by a vessel of light draft at high water, but it should be sounded first, as the sands shift.

A vessel drawing 11 feet is reported to have struck on a bank 1½ miles easterly from Seao-toi, but not less than 2¼ fathoms was found on it in March, 1844. The Southerly Monsoon may, however, cause the sands to accumulate. Cho-ho Pagoda, open to the northward of Seao-toi, will place you in 3 fathoms on its northern edge, and the South end bears S. 80° E. from Seao-toi.

Lynx Rock.

The Lynx Rock, with only 6 feet upon it at low water, lies S. 77° E. not quite 5 cables from the highest part of Seao-toi; when on it Ta-toi Summit bears N. 14° W. and Passage Island N. 62° E.

Taheen Rock.

S. 11° E., two cables from it, is the Taheen Rock, which shews at low water spring tides. When on it, Cho-ho Pagoda bears N. 87° W. and Ta-toi Summit N. 14° W. The bottom between it and the rocks, which lie S.S.W. from Seao-toi, is rocky and uneven, and in some places there is only 6 feet, but a channel through it is used by the vessels coming out of Chin-chew when the wind is too far to the eastward to permit them to fetch through between Seao-toi and the Lynx Rock, by keeping the highest part of the rocks S.S.W. from Seao-toi in line with Cho-ho Pagoda.

Mid-channel Reef.

The mid-channel reef South of Seao-toi is a cable's length from the S.W. point of that island. It is two cables in circumference, and three rocks shew at low water spring tides. The channel between it and the rocks South of it is rather more than half a cable wide. When on the reef the West summit of Seao-toi is in a line with the highest part of Ta-toi. Rocks extend half a cable from Seao-toi on its South, S.W., and East sides.

Choho Reef.

A sand spit extends easterly from Choho Pagoda 1¼ miles, and the reef off it bears N. 52° E. half a mile from the Pagoda, and from the summit of Pisai S. 73° E.

Ota Rock.

The Ota Rock, which is also covered at high water, lies East from Pisai 5 cables, Choho Pagoda bearing from it S. 40° E.

Entrance of Chinchew River.

The entrance of Chinchew River bears N. 65° W. 3 miles from Pisai. The channels are shoal and intricate, the large junks being obliged to wait for high water; near the mouth on the left bank is a circular fort. The city is on the North bank of the river 4 or 5 miles above the fort.

Pyramid Point

Pyramid Point, the north-eastern horn of the bay, is in lat. 24° 52′ N., lon. 118° 58′ E., Passage Island bearing from it S. 73° W. 8½ miles. Vessels requiring shelter during the North-east Monsoon will find it in the first bay West of the Pyramid,

taking care to avoid a sunken rock which lies a cable's length South of the first point to the eastward of the walled city of Tong-boo. The Pyramid Rock is connected with the point at low water, and to the south-eastward is a rock which is never covered. East of it are several rocks, the outer one of which bears N. 65° E. 6 cables from the Pyramid and the highest part of the land forming the North side of Matheson Harbour N. 11° E. A cliff head at the end of the promontory, extending south-westerly from the hills mentioned above, in one with a remarkable cone in the bay, bearing N. 16° W., will put you on it.

MATHESON HARBOUR.—Matheson Harbour, called by the Chinese Goolai, lies immediately to the northward of Chin-chew Bay, the isthmus near the town of Tong-boo being only one mile across. The bay is 4 miles wide at the mouth, and will afford tolerable shelter to vessels drawing 12 feet if the wind be to the northward of East; but it is only a roadstead, and that a bad one in the South-east Monsoon. There are no dangers in it except a rock, which lies North 4 cables from the largest islet on the South shore. The highest part of the North headland is in lat. 24° 57′ N., lon. 119° 0′ E.

MEI-CHOW SOUND.—Mei-chow Sound is 6 miles across at the entrance, and will be known by the Nine Pin Rock, which lies in the centre near the entrance. South of it one mile is a cluster of rocks, one of which, Square Rock, does not cover at high water; the outer part of the reef extends south-westerly 1½ cables from it.

West, 9 cables from the Nine Pin, is a flat patch, which is level with the water's edge at high water. Between this patch and Rugged Point, which forms the North head of the sound, is good anchorage in the Northerly Monsoon.

Rugged Point may be approached without fear except on its East side, from whence there is a reef rather less than a cable's length from the shore; 3½ and 4 fathoms will be found at the distance of 3 cables from the sandy beach.

N. 19° E., one mile from the Nine Pin, is a rock, which will be seen at low water, and bears N. 60° W. from the highest part of Rugged Point. There is a passage between it and the Nine Pin, but rocks extend one cable in this direction from the latter.

In the Southerly Monsoon vessels will find a good harbour to the N.W. of Saddle Island, which bears N.W. by N. 3¼ miles from the Nine Pin. Pass to the southward of the South islet off it, and haul to the northward round the western islet, giving it a berth of a cable at high water to avoid a ledge. The ground is uneven hereabouts, and there are only 2½ fathoms one mile to the W.N.W. of West Saddle Island. N. by E. from Saddle Island one mile is a low cliff islet, from the West point of which is a sand-bank, extending nearly ¾ of a mile to the north-westward. The South peak of Saddle Island kept to the eastward of S.S.E. will avoid it. When Mound Peak (which is on the Main and is 3 miles North of Saddle, with a walled town and Pagoda near it) bears East, you are past the sand-bank, and may haul in towards the town. N. 73° W., 2½ miles from Mound Peak, is a bank with only one fathom on it. The junks use the channel between Mound Peak and the Low Cliff Island, but it is awkward without personal knowledge. They also pass to the northward of Mei-chow Island, but this channel has but 9 feet, and is strewn with rocks. The sound runs back 10 miles to the northward of Mound Peak, forming narrow isthmuses between Ping-hae and Hing-hwa-foo Bays. Inner Harbour.

SOUTH ROCK bears W. ¾ N. 3¾ miles from Rugged Point. It is in lat. 25° 2′ N. and lon. 119° 11′ E., being about 60 feet high, with a rock South off it ¾ of a cable. South Rock.

North Rock bears N. 34° E. 9½ miles from the South Rock, and lies on the North side of Pinghae Bay. It is 90 feet high, is conically shaped, and is 4 cables from the North Rock and Reefs.

shore. The fort on the low hills West of the town bears from it N. 37° W. Reefs extend nearly one mile from the Main to the northward of North Rock.

Anchorage off Pinghae.

Anchorage will be found off the town of Pinghae in 3 fathoms, with North Rock bearing S.E. by E.

Five miles West of the anchorage is a high range of hills, one of the peaks of which (Marlin Spike) will form a good guide for this part of the coast. The bay runs back past the foot of the Marlin Spike range, but is shoal, there being seldom more than two fathoms to the westward of the range.

Lootzee and Rocks near it.

LOOTZEE.—Lootzee lies 5½ miles E.S.E. of North Rock, and there are two sunken rocks between them. These rocks lie 2 miles W. by N. from Lootzee, and when on them North Rock will be in a line with Marlin Spike Hill, and the N.E. islet of Lootzee is in line with the islet off the South face of Lamyet. There is also a rock, which shews at half tide, N.N.W. 2 cables from the N.E. islet of Lootzee, and another S. 9° W. 8 cables from it; the latter lies East from the high peak of Lootzee.

The sand bank extends 2¼ miles southerly from the S.W. point of Lamyet. By keeping the West end of the island (which has three chimneys on it) to the eastward of North, its western edge will be avoided. There is also a rocky patch, having only 1½ fathoms in some places, the East end of which bears S. by W. 2 miles from the East islet in the channel between Lamyet and the Main. On its South edge, the Chimney Point mentioned above bears N. 77° E.

ANCHORAGE TO THE WESTWARD OF LAMYET.—The junks anchor under the first point South of the Chimneys, off which there is a rock which will always shew. This will be found a snug anchorage for small vessels, as there is a considerable swell in the channel between Lamyet and the Main with a northerly gale. Care must be taken to round the rock at the point close, as there is a sunken rock in the bay 6 cables to the southward of it, and the reef must not be brought to the westward of N.N.W. as the water shoals suddenly.

Anchorage for large vessels will be found to the northward of the Chimney point in 4 and 5 fathoms; the depth of water opposite the point is from 12 to 15 fathoms.

Vessels intending to pass to the northward and westward of the Lamyets ought to use the channel to the northward of Passage Islands, which are three in number, and bear N.N.E. 5 miles from the Chimney point. Between the North point of Lamyet and the Passage Islands is Cliff Island, in the neighbourhood of which are several reefs, rendering the channel between it and Lamyet, also between it and the Passage Islands, precarious.

A ledge extends westerly 2 cables from the S.W. point of West Passage Island. The channel to the northward of it is 4 cables wide, being bounded on the North by a rock with a reef which shews at low water a cable and a half West of it.

North of the rock 1½ cables is a small islet, and northward of the islet 4 cables is Rugged Island.

The North-east of the Passage Island is a bold bluff which is steep to on its northern face, from whence you may steer to pass either North or South of White Island which bears West* from Passage Island 4½ miles. If to the South beware of three rocks which lie S. by W. 1 mile from it.

E. 12° N. 2¼ miles from White Island is the South rock of a reef extending from an island on the coast, which having passed, vessels may haul to the northward, and work up inside Chimney Island, to the westward of which there are no dangers, except a rock at the entrance of the inlet (on the South point of which is a walled town and a pagoda) on the western shore, which will be avoided by keeping 1½ cables from the shore.

* *East* by the Chart.

The sailing directions for passing to sea northward or southward of Chimney Island have already been given by Capt. Kellett.

The passage through the Hae-tan Strait is not to be recommended, being very intricate; the junks however invariably use it, but we found one that had been detained 27 days, waiting for an opportunity to get out at the northern end. The flood tide comes in at both ends of the Strait, meeting in the neighbourhood of the Castle Rock. Hae-tan Strait.

HUNG-HWA-FOO SOUND.—Vessels bound into Hung-hwa-foo Sound must steer to the northward from Chimney Point (on the West side of Lamyet) 7 miles, when they will be a mile to the northward of Nob Island, and may steer for Fort Point which bears N.W. 7½ miles from Nob. There is a patch of rocks to the N.W. of Nob Island, the easternmost of which bears N. by W. from it 8 cables, and the northernmost N.W. ½ W. 2¾ miles; part of them always shew.

Another patch will be found E.S.E. of Fort Point, the south-easternmost of which bears S. 68° E. 2 miles from Fort Corner.

Good anchorage in 6 fathoms will be found with the Fort Corner bearing E.N.E., but the point extending from it has rocks which will shew at low water 1½ cables from high water mark. The sand line at low water trends N.W. by W. from the point.

The entrance to Hung-hwa-foo River bears W. by S. from the Fort Corner, the depth of water shoals to 6 feet 5 miles from the Fort. On the main S.W. from the Fort is a piratical establishment.—May 22, 1844.

Sailing Directions for the Pescadores Islands, by Captain Collinson, R.N.

The PONGHOU, or PESCADORES, consist of twenty-one inhabited islands, besides several rocks. They extend from lat. 23° 13′ to 23° 48′ N. and lon. 119° 16′ to 119° 37′ E. Their general appearance is flat, the summits of many of the islands being nearly level, and no part of the group being 300 feet above the sea.

The two largest islands are situated near the centre of the archipelago, forming an extensive and excellent harbour between them. The western island of the two (Fisher's Island) is 5 miles from North to South, and 3¼ miles from East to West. On its S.W. extreme is a lighthouse 225 feet above the sea. Lighthouse.

To enter the harbour, pass half a mile to the southward of the Lighthouse Point, and then steer for Macon, which is situated on the North side of an inlet on the great Ponghou, and will be readily recognized by a citadel, and a line of embrasures.

The large junks waiting for a favourable wind to take them to Formosa, lie to the S.W. of the town in 7 and 8 fathoms water, with a black rock, which is midway between Fisher's Island and Macon, bearing about N.E. by N.

In the Plover, we ran into the inner harbour to the eastward of Macon, passing between it and Chimney Point, and anchored with the latter bearing N. 54° W., distant 6 cables, which is also the width of the channel here.

The junks belonging to the place lie close to the town, in a creek, which runs back to the northward of the citadel. There is water sufficient for a square-rigged vessel, but the harbour there is much confined by coral reefs.

The only danger on entering the harbour by this passage is a shoal with only nine feet on it at low water, which lies N.W. ½ W. from the centre of Small Table Island. Its S.W. extreme having 4 fathoms water, bears N. 50° W., 1·1 miles from the South end of Small Table; and its N.E. limit bears N. 55° W. from the North point of the same island. The western limit bears S. 65° W. from Dome Island. Dangers.

Dome Island lies N. by E ½ E., 1¾ miles from Small Table, and has a reef Dome Island.

which is just awash at high water, 5 cables to the westward of it. It is 2½ cables from the S.W. end of the large Ponghou.

Flat Island. To the northward of Dome Island is Flat Island, which is 2 cables to the westward of Chimney Point, and is surrounded by reefs which extend a cable's length from high water mark.

Shoal water extends northerly ¾ of a cable from Chimney Point, on which is the Old Dutch Fort.

Inner Harbour. The Inner Harbour runs back 3 miles to the eastward from Chimney Point. There are 4 coral patches in it which are awash at low water spring tides, and may always be detected from the mast-head in time to avoid them.

The westernmost bears from Chimney Point S. 59° E., and from the Dome Hill (a remarkable elevation in the southern part of the harbour) N. 14° W.

On the same bearing from the Chimney Fort, and 2½ cables farther to the eastward, is another patch, on which the Dome Hill bears South; and with the Dome Hill S. 5° W. and a Dutch Fort N. 48° W. is another reef. Also, with the Fort bearing N. 49° W., and the Dome Hill S. 32° W., is the fourth shoal. They are all small in extent, and steep to.

The Chimney, or Dutch Fort, above alluded to, is on the S.W. point of the Great Ponghou, which in some places is barely a cable's length broad, and so low, that a vessel in this part of the harbour might be fired into from one outside.

Great Ponghou. The Large Ponghou is 9½ miles from North to South, and 7 miles from East to West. It is, however, separated into three portions by narrow channels, which have only 2 feet at low water, and are further blocked by stone weirs. The whole of the western face of the island is fronted by coral reefs. Water is obtained from wells; the three we used yielded three tons daily. Bullocks and fish were reasonable and plentiful.

Vessels in a N.E. gale seeking shelter will find smooth water between the lighthouse and the S.E. point of Fisher's Island, where there are two sandy bays, in the northern of which is a fort or line of embrasures, and in the southern is a run of water except during the dry season.

Black Rock. The S.E. point is a bold cliff 170 feet above the sea, N. 54° E. 1½ miles from which is the Black Rock, part of which is always uncovered. Vessels passing to the N.Eastward of it must keep within 4 cables, as the coral patches extend in this direction from the large Ponghou.

Fisher's Island. The coast line of Fisher's Island trends North from the S.E. point, forming several small bays which are steep to within a cable of the beach, until you are 2¼ miles North of the South-east point when the reefs extend nearly three cables. To avoid which the fall of the S.E. point must not be brought to the southward of S. 14° W. after Macon citadel opens to the northward of the Black Rock.

The Plover lay beyond this point in 3 fathoms with the Black Rock bearing N. 19° E. and the highest part of the centre island E. ½ N. In the bay abreast of her was a good stream of fresh water. The harbour beyond this point is much choked with coral patches; there is however a passage out between Fisher's Island and the Large Ponghon for vessels of 16 feet draft; to render it available, however, local knowledge is necessary.

To avoid the coral reefs which extend from the shore of the Great Ponghou do not stand further over on that side than to bring the Black Rocks S.S.W.

Shelter from southerly winds will be found in the bay formed by the northern ends, Fisher's Island and the Great Ponghou. The N.E. point of the former is a table bluff, with reefs which cover at high water extending 2 cables north-easterly from it.

Tortoise Rock. The Tortoise Rock, which is 2 miles from the N.W. point of Fisher's Island, is 9 feet above high water and is steep to. There is a shoal patch of 2 fathoms about

half a mile to the southward of it; and on the western face of Fisher's Island is a reef which breaks at low water 7 cables from the shore and which bears N. 14° E. from the lighthouse. Shoals.

The Archipelago to the northward of Fisher Island and Great Ponghou does not afford any inducement for a vessel to enter it. The external dangers therefore will only be noticed.

Sand Island. N. 58° E. from the Tortoise Rock is Sand Island, which will be known by a hummock which rises on the low land in the centre of the island. Off its S.W. end is a rock, and the reefs extend north-westerly 3 cables from it. To the eastward of it half a mile is a flat black island, and to the northward is a cluster of stones, some of which are always above water.

Low Island. Low Island bears E.N.E. from Sand Island; a long sandy point forms its South extreme from the North point, the shoal water extends 3 miles.

North Island. North Island, which is nearly connected by reefs with Low Island, is $1\frac{1}{2}$ miles from the North point of it, and has a house on it for the shelter of the fishermen.

North Reef. The northern extremity of North Reef uncovers at low water, and bears from N. 29° W. to N. 9° W. from North Island distant $1\frac{1}{2}$ miles; from its West extreme, which is steep to (for the lead gives no warning), Sand Island bears S. 20° W., and as from the West point of Low Island the reef extends towards the North Reef, Sand Island must not be brought to bear to the westward of S. by W. until the West point of Low Island bears to the eastward of E. by S. Shelter from southerly winds will be found to the northward of these reefs and Low Island.

N.E. Sand Island. From the N.E. end of Low Island, North East Sand Island bears S.E. by S. 5 miles. It is a small islet with a sand patch on its South cliff, and is surrounded with rocks, being nearly connected with the two islands to the southward of it, the southern of which has a large village on it.

Organ Island. S. 16° E., 3 miles from North East Sand Island, is Organ Island; there is a reef bearing N. 37° E. 1 mile from it; when upon it, North East Sand Island bears N. 34° W.

Ragged Island. Ragged Island bears S.E. by E. $1\frac{1}{4}$ miles from Organ Island. The whole of the East coast of the Large Pescadore, opposite these 5 islands, is shoal. The eastern extremity is a low shelving point, $1\frac{1}{2}$ miles from which is Round Island, bearing from Ragged Island S. 20° E. $3\frac{1}{2}$ miles, and S. $\frac{1}{2}$ E. $1\frac{1}{4}$ miles from Ragged Island is Tripple Island. Round Island. Tripple Island.

N. 59° W. from Tripple Island and S. 45° W. from Round Island is a reef, which covers at half tide; and between Round and Organ Islands are several overfalls. The S.E. point of the Great Ponghou bears N. 52° W. from Tripple Island, and between the two are two bays with fishing villages, either of which would afford tolerable shelter in the Northerly Monsoon.

Great Table Island. Great Table Island is aptly named, the summit being a dead flat 200 feet above the sea. Not far from the S.W. end is a sudden fall nearly to the level of the sea, giving at a short distance the appearance of two islands. It is not quite 2 miles in an E. by N. and W. by S. direction, and is seldom 3 cables in width. Towards the N.E. end was a good run of water in the month of June. The two fathoms line extends 2 cables from its eastern extreme.

Small Table Island. Small Table lies a mile to the N.W. of the Great Table, and between the two there are from 12 to 19 fathoms water. The distance from Small Table to the South point of Great Ponghou is $2\frac{1}{2}$ miles, with from 2 to 32 fathoms water. Directions for avoiding the shoal off Small Table Island have already been given.

West Island. From Great Table Island, West Island bears S. 66° W. $10\frac{1}{2}$ miles, and from the lighthouse on the South end of Fisher Island S. 40° W. 12 miles. It is two miles in circumference and uneven in appearance.

High Island. South of West Island, $4\frac{1}{2}$ miles, is High Island, which is dome-shaped, 300 feet high, and $\frac{3}{4}$ of a mile in circumference. To the eastward of it one mile is a low flat island, and between the two are several rocks, one of which rises to the height of 60 feet, with a remarkable gap in it, and S. 51° E. $1\frac{1}{2}$ miles from the summit of High Island is a rock nearly level with the water's edge.

South Island. South Island is 2 miles from East to West and $1\frac{1}{2}$ from North to South. The depth of water in its vicinity is 15 and 16 fathoms. On its S.W. side is a reef of rocks extending 6 cables from the shore, within which is a small harbour for boats; its eastern face is bold cliffs. The western extreme is a long shelving point, and the highest part of the island 260 feet above the sea. From it High Island bears N.W. $\frac{1}{2}$ N. 9 miles; Reef Island N.E. by E. $\frac{1}{2}$ E. 6 miles; East Island E. by N. 12 miles.

Reef Islands. Reef Islands are three in number, one of which is a remarkable pyramid; the other two are rather more than a mile each in circumference, and are connected at low water by a stony ledge. To the southward of them the reefs extend half a mile. South from the East end of the eastern Island of the two is a pyramidal rock 80 feet above the sea; there is also a low flat rock nearly level with the water's edge S. 33° W. $1\frac{3}{4}$ miles from the same place; and S. 45° E. from the East end is a small peaked rock, with a reef to the southward of it.

East Island. East Island lies East of Reef Island $8\frac{1}{4}$ miles. Between the two and distant 5 miles from the latter is a smaller island, 1·6 miles in circumference, with a reef extending easterly not quite a mile from its North point. East Island is $2\frac{1}{2}$ miles in circumference, and has a small islet 5 cables from its western shore.

Nine Feet Reef. The Nine Feet Reef bears N. 19° E. from the East end of East Island; when on it the Dome Hill on Ponghou bears N. 73° W. $10\frac{1}{2}$ miles; Tripple Island N. 29° W. 4 miles. The lead gives no warning, but if there is any tide the ripple will be sufficient to indicate its position.

Rover Group. The Rover Group is composed of two larger islands and several rocks; the western of the two islands is 2 miles from North to South and 1 from East to West; the summit is near the eastern shore, and rises like a dome, with a large pile upon it. S.W. from it $2\frac{1}{2}$ miles is the end of a reef which extends westerly from the South point of the island: its extreme shews at all times of tide. There is also a rock under the highest part of the island, bearing S. 70° W. from it, 2 cables from the shore. The N.W. point of the island is not steep to, and off the N.E. point is a rock which will always shew: there is a channel between it and the point. The distance between the East and West Islands is barely a cable; the former is a mile from North to South, and $1\frac{1}{2}$ miles from East to West: on its N.W. face are two islets. In the bay, to the southward of the southern one, a small vessel might take shelter in a northerly wind, taking the precaution not to stand too far in, as there are only 6 feet 2 cables from the beach. On the West end of the island, which is a cliff, are three embrasures. Having passed between the two islands, in doing which the western island should be kept on board, a small rock in the centre of the channel, to the southward, will be seen. Pass to the eastward of it, but the channel is narrow, and the only excuse for a stranger using it would be being caught at anchor to the northward of the two islands in a breeze from the northward, and unable to fetch clear either to the eastward or westward. The West point of the East Island is remarkable from an insulated cliff 100 feet high, which forms the most striking feature in the group, 7 cables to the westward of which is a ledge of rocks, part of which is always above water. The islands are sufficiently large to afford shelter in either monsoon. The general depth of water on the southern shore is 7 and 8 fathoms, and on the northern 13 and 14. From the highest part of the Rover Group the lighthouse bears N. by W. $10\frac{1}{2}$ miles; the Reef Islands bear S. 8° E. $3\frac{1}{4}$ miles from the same place. The general depth of water on the western side of the archipelago is 30 and 35 fathoms; there are, however,

some places in which there is as much as 60. To the eastward of the group the depth is 40 fathoms, and the current is strong. The tides are much affected by the prevailing winds; so much so, that during the month of August we sometimes experienced a tide of 4 knots per hour on the flood running to the northward, whilst with the ebb the current slackened for two and three hours, but seldom ran with any velocity from the northward. On the whole, a person navigating in this neighbourhood may safely allow that the effect of the current, and tide together, will set him, according to the prevailing monsoon, 17 miles in one tide.

ASTRONOMICAL POSITIONS.

Name.	Spot.	Lat. N.		Lon. E.	
		°	′	°	′
Observatory	Second Point on North side Inner Harbour	23	33	119	30
Dome Hill	Summit	23	32	119	31
Lighthouse	.. ..	23	33½	119	25
South Island	Centre	23	13½	119	22
High Island	Highest part	23	20	119	16
East Island	South Point	23	16	119	37
West Island	Highest part	23	24½	119	17
Nine Feet Reef	.. ..	23	28½	119	42
Tripple Island	Highest part	23	32	119	39½
N.E. Sand Island	Highest part	23	40	119	36
North Reef	.. ..	23	47½	119	32
North Island	Highest part	23	46	119	32

Variation 0° 54′ West.

TORRES STRAIT. *Beacon on the great Barrier Reef.*

Her Majesty's government having directed that a lofty and substantial beacon of stone should be built on one of the rocks of the Great Barrier Reef, for the guidance of vessels bound through Torres Strait; and Captain Blackwood, of H.M.S. Fly, having selected Raine Island for that purpose, and having recently reported that the beacon had been completed, the following notice of it is now published by the Admiralty for the benefit of seamen.

The beacon is of a circular form, 30 feet in diameter at the base, and 27 feet at the top; the building is 64 feet in height, and at low water it stands 75 feet above the level of the sea. It is painted with alternate red and white vertical stripes; and in clear weather it is visible from a ship's deck at the distance of 8 or 9 miles, but from the mast head, at 12 or 13 miles. Its lat. is 11° 35′ S. and lon. 144° 6′ E. of Greenwich.

Raine Island is in the middle of an opening, of about 8 miles in breadth, through the outer Barrier Reef; no bottom is found with 125 fathoms in any part of this opening, nor close up to the island, which is a low and narrow coral rock about a quarter of a mile in length. Though without water, it carries a coarse green vegetation, while Pandora Islet, which is 8 miles farther to the northward in lat. 11° 27′ S. is a bare bank of sand.

The extreme points of the reefs which form the above opening bear from the beacon N.N.E. ½ E. and S.S.E. ¾ E. by compass. The time of high water at full and change is 10 o'clock; the rise at ordinary springs about 10 feet; and the strength of the tide sometimes amounts to 2 knots. The flood comes in from the eastward and there is a general current of about a knot, setting to the northward (or to leeward) along the face of the reef. The variation of the compass is 4° 30′ E.

A vessel coming from the southward, and intending to penetrate the Barrier by Raine Island, should be pretty certain of her latitude; and when running in to the westward towards the reefs, she should so shape her course as to make the beacon well on the starboard bow, in order to allow for the northerly current.

When the beacon is clearly made out the island will soon be seen and may be passed on either hand, as both channels are $2\frac{1}{2}$ miles wide. The southern channel will be the most convenient, but the reef, which projects a good mile from the S.E. end of the island, must be avoided.

When the island is passed, a S.W. by W. $\frac{1}{2}$ W. course by compass will lead through a wide opening in the second line of reefs, and the Hardy Islands will soon be seen, as their distance from Raine Island is but 40 miles. Some scattered coral heads will, however, have to be passed, for which a good look-out should be kept; and it is recommended to all vessels, which have to run to the westward among these coral patches, to do so in the morning, before the sun passes much to the westward of the meridian, as the patches may then be distinctly seen from the mast head, or from the fore yard, at both of which places a careful look-out man should be stationed.

CHITTAGONG.—The following notice has been published respecting the lights on the coast:—

East-India House, London, April 29th, 1846.

Notice is hereby given that the Court of Directors of the East-India Company have received intelligence from Calcutta, to the effect that the Light vessel stationed between the Patches on the Coast of Chittagong, in lat. 21° 27′ N. lon. 91° 45′ E. would be withdrawn on or about the 20th of April, and that it was expected that the Lighthouse on Kootubdeed Island would be lighted in the beginning of the month of February last.

J. C. Melvill, Secretary.

PENANG.—The following instructions drawn up by Mr. Congleton, of the East-India Company's steam ship Diana, have been published by the resident councillor at Singapore, for the guidance of vessels entering Penang from the southward.

There are two lines of beacons; those on the east side of the channel, five in number, are painted white in the form of a cross, and those on the west side, three in number, painted red in the form of a triangle.

The first or southernmost white cross beacon is visible from 3 to 4 miles, bearing E. ¼ N. from the south end of Saddle Island, and S.S.E. one mile from the middle of Pulo Remo.

Vessels will be safe in working if they do not stand to the eastward of the white cross beacons.

The southern red triangle beacon is off the north end of Pulo Jerajah, and vessels having passed it must take care to keep more on the east side of the channel to avoid a small patch, with 2¼ fathoms on it at low water, bearing nearly N.N.E. a quarter of a mile. With this exception vessels can safely work in by keeping between the beacons. Each beacon is placed on a projecting spit of sand or mud in 2 fathoms low water spring tides.

SUNDA STRAIT.—A small coral shoal is reported by Commander Justice, of her Majesty's ship Philomel, from information received from Lieutenant Melvill, of his Netherlands Majesty's navy, attached to the hydrographic office at Batavia.

The shoal lies N. 74° W. (?) from the Button 1½ miles; N. 28° E. from the south point of Thwart-the-way; and N. 52° E. from the north point of the same island. When on the shoal the south point of Tulphin Island (?) is in line with the north point of Pulo Bessey. The shoal, which is very small, has 2¼ fathoms on its shoalest part, and near and around it 12 and 16 fathoms.

BANCA STRAIT.—A rock is reported to have been seen by the captain of the Danish brig Queen Caroline, on October 13, 1845, 3 feet high, and 30 yards in circumference. Fourth Point bearing S. ¾ W. 8½ miles; Mintow Point N. by W. ¾ W. 9 miles; and Tan Pooni N. E. 8 miles.

GASPAR STRAIT.—The barque Columbian, of Liverpool, was lost in April, 1845, by striking on a rock to the northward of this strait. Mr. Wakem, her commander, reports that just after having a cast of 17 fathoms the ship struck, but without stopping. Having immediately anchored the damage was found so considerable that the crew were obliged to abandon the ship. Bearings taken five minutes after anchoring were Gaspar Island E. by S. and Tree Island S. E. by E. ¼ E.

SINGAPORE STRAIT SHOAL.—Notice of this shoal was published in the *Canton Register* of 21st of October, 1845, by the request of Admiral Sir T. Cochrane.

Magnetic bearings from the shoal	North Extreme of Bintang I.	S. 89° E.
	Little Bintang Hill	S. 13° E.
	Barbucit Hill	N. 55° W.
	Pedra Branca	N. 16° W.

The shoal has $2\frac{3}{4}$ fathoms on it at low water spring tides, and although recently discovered, is the direct route of ships passing through the south channel.

The Sunken Rock on which the Stork was wrecked lies something less than a mile outside the Romania Islands. The bearings when on the rock are, Barbucit Hill W. by N. $\frac{1}{2}$ N.; Inner Point N. by W. $\frac{1}{4}$ W.; Extremes of the three islands off Romania Point W. $\frac{1}{2}$ N. and W.N.W.

DANGERS IN THE CHINA SEA.—Until the southern portion of this sea is minutely surveyed we may continually expect reports of new dangers; and although in a spot so studded with shoals many must necessarily be merely the repetitions of the same dangers in different positions, we think it the safer mode to keep alive the vigilance of the navigator by naming them when reported.

Mr. Eldad, of the ship Cacique, reports an extensive reef in lat. 10° 17′ N. and lon. 114° 24′ E., and a sand bank in lat. 10° 41′ N. lon. 114° 29′ E.; the latter being very near the position assigned to South Island, and its shoals in the chart are doubtless identical or connected with them.

Another shoal is reported by Mr. M. B. Walker, of the brig Vanguard, in lat. 7° 32′ N. and lon. 109° 35′ E. On this shoal he had several casts of 14 fathoms, and then no bottom with 30; sounded half a mile in 14 fathoms, S.W. and N.E.

TINGY ISLANDS.—The following remarks by Captain Ross, of the Honourable Company's steam-ship Phlegethon, may be useful to vessels who find themselves in the neighbourhood of these islands.

The Phlegethon anchored off the S.W. part of Pulo Tingy on the 14th of August, 1845, and found both the watering places had dried up. On the following day anchored on the west side of High Island, bearing N.N.W. $5\frac{1}{2}$ miles from Pulo Tingy. Found here three springs of clear fresh water, the principal one on the N.W. point of the island, to the southward of a small patch of mangrove jungle. The following bearings were taken from the Phlegethon when at anchor.

Extremes of the island, N. $\frac{1}{2}$ E. to S.S.E. $\frac{1}{2}$ E.
The best watering place, N.N.E. $\frac{1}{2}$ E.
Two smaller ditto, N.E. by E. and E.N.E.

Regular soundings were found between this island and the mainland, there being $8\frac{1}{2}$ fathoms, mud, in mid channel, decreasing gradually to the eastward and westward to 5 fathoms, sandy bottom. There are two dangers not marked in the charts in general use. One is a rock, above water, with small detached rocks round it, and bearing from High Island E. $\frac{1}{4}$ S. about 2 miles. The other is a reef about a mile off the north part of Pulo Tingy, and having deep water between it and the coral that lines the beach. In fine weather the reef is visible only at low water, spring tides; but has heavy breakers on it in the N.E. monsoon.

ROCKS NEAR TAMBELAN.—Mr. Alexander Rodger, of the barque Ellen, gives the following account of a rocky patch, on which the ship, by touching once, lost part of her false keel, and had her rudder nearly unshipped. He examined the spot, in a boat, and found the shoal to be about 100 yards square, and to consist of sharp pointed rocks, having on them from 5 fathoms to 9 feet. He places it in lat. 0° 40′ N., and lon. 107° 34′ E., the peak of the highest Tambelan bearing N. 1° E. 20 miles in a line with Puro Jarrang.—*Singapore Free Press.*

BORNEO.—There is a rock awash 3 miles North of Cape Sipang, of which ships approaching the entrance of the Sarawak should be aware, as by the most

recent chart there appear to be 6 and 7 fathoms water in its immediate neighbourhood.

BANK NEAR THE CAGAYANES.—The ship Sultana, J. Wadge, Master, accompanied by the barque Flora, report a bank, several miles in extent, to the northward of the Cagayanes. The Sultana's boat being sent to examine the shoal, found the sounding decrease from no bottom at 35 fathoms to 11, 7, 5, 4, 3, 3, 3, and one cast of 1½; from the shoalest part the bank appeared to be about 3 miles in extent, but Mr. Wadge afterwards remarks, that seen from aloft it appeared to extend many miles to the southward, and might even reach the Cagayanes. From the shoalest spot in 1½ fathoms, the boat steered E. by S. and had three casts of 3 fathoms; then steering North about 100 yards, had 3, 4, 5, 7, 10, and no ground at 35 fathoms. He places the shoalest spot in lat. 9° 59′ N. and lon. 121° 24′ E., by chronometers which he found going well on reaching Batavia. This may probably be connected, or identical, with the Golconda Shoal.—*Hong Kong Register, Sept.* 9, 1845.

MANILA BAY.—A shoal is reported to exist on the southern side of Cavallo Island, and is said to project from the island in a S.E.½E. direction, about ¾ of a mile.—*Naut. Mag.* 1846, p. 379.

Sailing directions from Hong Kong to Namoa, 1845, *by Captain R. Collinson, C.B. R.N.*

TAMTOO.—Good anchorage will be found on the north side of Tamtoo in 6 fathoms, but vessels must bear in mind that the water shoals to 2¾ fathoms, 3 cables' length from the Joss House upon the north shore. The island is 810 feet above the sea, and 3 miles in circumference; it is separated from the main by the Foo-tow-mun, which is 1¼ cables across, and has 3 fathoms in it. Rocks lie off both shores in the passage, and there is a sunken rock bearing S. 49° E. from the north point of Tamtoo. When upon it the west end of Steep Island (the first island to the northeastward) just shews clear of the foot of a remarkably bold bluff, this side of it, bearing N. 28° E. There is a ruined fort on the first point of Tamtoo, to the eastward of the Pass, and the southern point of the island is a low peninsula, the distance between which and Waglan (the easternmost of the group, South of Hong Kong) is 3 miles bearing S. by E. Tamtoo. Waglan.

From the Foo-tow-mun to Steep Islet the distance is 1½ miles. The latter is 4 cables' lengths from the shore. One and a half miles North of it is Triple Islet, with a rock N.W. of it. On the main, between Triple and Steep Islets, is an indentation in the coast, with 8 fathoms of water in it, but it is exposed to the easterly winds and swell. Steep Islet.

THE NINE PIN GROUP lies 3 miles east of the Foo-tow-mun. The two largest are the two western isles which lie north and south of each other, the channel between them being 2 cables wide. South Islet is 400 feet above the sea, the highest part being towards the south end. On the S.W. side is a small islet, and there is a peaked rock off its north point. On the North Islet, the hills are nearly all of the same height, and near its northern end is a remarkable cleft, nearly severing the island; there is also a small islet on its S.W. face. Nine Pin Group.

The Nine Pin lies to the eastward of the latter nearly one mile; it assumes the appearance its name indicates when seen in a N.W. or N.E. direction, otherwise it is liable to mislead. Close to it, on the N.W. side, is a smaller islet, and there are detached rocks on its N.E. and West sides. N. 42° W. from it 9 cables is a flat rock,

nearly level with the water's edge, with a reef which breaks at low water, not quite a cable's length S.E. of it.

Sunken Rock. S. 9° W. from the Nine Pin, nearly 7 cables, is a rock, with 1 foot water upon it at low water, spring tides. When on it the South part of the South Nine Pin bears W 2° S. being in line with the shoulder of the hill to the right of the highest part of Tamtoo, and the right extreme of the rock on the north side of the North Islet is in a line with the summit of a larger island, called Shelter Island, in the bay to the northward, bearing N. 49° W.

The channel between the Nine Pin Group and Steep Island is not quite 2 miles wide, with a depth of 17 to 15 fathoms. There, upon the change of the moon in May, 1845, the flood tide ran to the S.S.E. and the ebb to the S.S.W. the former at the rate of 0·3 knot and the latter 0·5 knot per hour.

Flat Islet. Seven cables to the northward of Triple Island is Flat Islet, and between it and the main, 8 cables distant, is a cluster of low rocks, part of which are always above water.

CENTRAL ISLANDS.—To the North of Flat Islet 9 cables, are the Central Islands, which are $3\frac{1}{4}$ miles from North to South, and separated from each other by a narrow channel, in which there is only one foot at low water. Off the South point $1\frac{1}{2}$ cables is a peaked rock with a rock awash at high water E. 3° N. of it, rather more than 1 cable. On the western side of the Central Islands is Port Shelter, which extends $5\frac{1}{2}$ miles in a northerly direction, and is separated from the southern portion of Mirs Bay by an isthmus, $1\frac{1}{2}$ miles wide. Over this end of the bay is a remarkably high peak, the Hunchback, 2,310 feet above the sea, which, with the sharp peak at the western side of the entrance to Mirs Bay, form the leading marks by which this portion of the coast may be recognized from the south-eastward.

Port Shelter.

The Hunchback.

Shelter Island. The first island to the N.W. of Flat Island is Shelter Island, which is about $\frac{3}{4}$ of a mile in length, and distant from the Central Islands 1 mile. Vessels, for reasons which will be given hereafter, should keep on the eastern side of it.

North of Shelter 2 miles is Sharp Island, 4 cables distant from Central Island. Good anchorage may be found between the two in 7 or 8 fathoms. Nearly mid-way between Sharp and Shelter Islands is a rocky patch, which has only 9 feet on its shoalest part. From it the opening between the two central islands bears East, and the summit of Flat Island S.E. $\frac{3}{4}$ S., being in a line with the N.W. end of the North Islet of Nine Pin Group; also the West end of Shelter bears S. by W.

Reef.

Rather more than a mile to the westward of Sharp Island is Long Point, and between the two is good anchorage, except in southerly winds. Small vessels may pass through this channel and North of Central Islands into Rocky Harbour.

Hebe Haven. To the westward of Long Point is Hebe Haven, the entrance to which is rather more than a cable across, and the depth inside 3 fathoms.

The most convenient anchorage for a large ship will be found to the N.W. of Shelter Island in $7\frac{1}{2}$ and 9 fathoms, and by passing within 6 cables of the north point of it, the rocky patch which has been mentioned above will be avoided.

Southerly, one cable, from the west point of Shelter Island, there is a rock awash at low water; and there is a patch of $2\frac{3}{4}$ fathoms 5 cables west of it. Flat Island bears from it E.S.E., and the north point of Shelter, N.E. $\frac{1}{2}$ E. There is also a $3\frac{1}{2}$ fathom patch bearing W.S.W. from the south point of Shelter, and N.W. by W. $\frac{3}{4}$ W. from Flat Island; and another with 3 fathoms on it W. by N. $\frac{1}{4}$ N. from Flat Island, and S. E. $\frac{1}{2}$ S. from the west point of Shelter.

The distance between Shelter Island and the Main to the westward being not quite 4 cables, will, with these dangers, render it prudent to keep to the eastward of it until past its northern point.

ROCKY HARBOUR is formed by Central Islands on the West, High Island on the North, and Town, Basalt, and Bluff Islands to the East and S.E. Rocky Harbour.

The south entrance, between Bluff and Central Islands, is one mile across. On the east side of Central, 2 cables from the shore, is Bay Island, which is low and flat, and midway between it and the north end of Bluff Island is a rocky patch with only 3 feet at low water. When upon it, the west point of Bluff Island is in one with the summit of North Island of Nine Pin Group, and the southern summit of Bay Island bears N. 67° W. The east end of North Island in line with the west point of Bluff will keep you clear to the west of it;* and when a remarkable pyramid rock on the north side of Basalt Island opens clear of the north end of Bluff Island, you are to the northward of it.

There is another patch of 3 fathoms 7 cables to the northward of it. Bay Island summit bears from it S. 67° W. and Pyramid Rock S. 49° E., and a small islet on the north shore N. 81° E. 3 cables.

Anchorage in the Northerly monsoon will be found to the westward of Green Islet and in the neighbourhood of a cove, where there is a village and a magistrate. There is a depth of 6 fathoms inside the cove, but the space is confined, owing to sunken rocks. In the S.W. monsoon vessels will find good shelter to the N.W. of Bay Island. Anchorage.

To the eastward of the three-feet rock at the entrance of the harbour is foul ground with several casts of three fathoms. Small and handy vessels may, however, pass through between Basalt and Town Islands.

Basalt Island lies 4 cables S.E. of Bluff Island, the depth being 5 fathoms between them; the former is $\frac{3}{4}$ of a mile long, and rises to the height of 572 feet; the southern faces of both it and Bluff Island are very precipitous. Basalt Island.

Town Island lies to the northward of Basalt Island, the channel between them being 4 cables wide; it is, however, obstructed by three islets and a rock awash at high water. Town Island.

The channel between Town and High Islands is in some places barely one cable wide, and has 4 fathoms water. The latter is $7\frac{1}{2}$ miles in circumference, and is 910 feet above the sea. It is separated from the main by a shallow channel. High Island.

To the eastward of Town Island is Hole Island, 304 feet above the sea, and N.W. (N.E. by the chart) of it are two low islets. Hole Island.

From Hole Island the land trends north-easterly to Cone Islands, from which it is distant $2\frac{1}{4}$ miles. It is not quite a cable's length from the shore, and to the westward of it is a bay $3\frac{1}{2}$ cables wide and 7 deep, which will afford shelter in the N.E. monsoon.

North of Cone Island is a bay $1\frac{1}{2}$ miles across at the entrance, within which are two islets and a rock; but the bay is open to the eastward, and exposed to a long swell.

Sharp Peak, which is 1,540 feet above the sea, overlooks this bay, and bears from the Nine Pin N. $\frac{1}{4}$ W.† 9 miles.

MIRS BAY is $5\frac{1}{2}$ miles across at the entrance; its extent northerly is 11 miles, and in an east and west direction 18. Mirs Bay.

Gow-tow-pyah is a rock 90 feet above the sea, situated near the centre of the bay at the entrance. $5\frac{1}{4}$ cables from it, S. 60° W., is a rocky ledge, part of which is always uncovered. The islet of West Gow lies $1\frac{1}{2}$ miles to the S.W. of this patch; it is 80 feet above the sea, and 5 cables from the point under Sharp Peak. Off this point are two islets, and the coast takes a sudden turn to the westward, forming a bay which will give good shelter from south-westerly winds in 8 fathoms. Gow-tow-pyah and West Gow.

W. 4° S. from Gow-tow-pyah is the termination of the mainland in a northerly

* This mark will *barely* clear the danger according to the Chart.

† N. $\frac{1}{4}$ E. by Chart.

Grass Island. direction. Grass Island lies 3 cables to the northward of it, but the channel is obstructed by rocks, which extend nearly a cable from each shore; there is, however, a depth of three fathoms a cable wide.

Grass Island is $1\frac{1}{4}$ miles from North to South, and half a mile from East to West. $3\frac{1}{2}$ cables from its eastern side is North Gow, a large black rock, with a reef awash at high water N. 40° W. 4 cables from it; sunken rocks extend westerly from the reef.

Port Island. To the northward of Grass Island is Port Island, the distance between the two being 7 cables. The reef just mentioned is $5\frac{1}{2}$ cables from the S.E. point of the latter, which is $1\frac{3}{4}$ miles in circumference, and 430 feet above the sea. Its eastern point is narrow, and projects 3 cables from the body of the island. On the north side of it is a good watering place.

Long Harbour. Long Harbour extends to the southward 5 miles from Port Island, and is formed by Grass Island and Isthmus Head, the distance between which and the entrance is 7 cables. Both shores are steep until near the S.W. point of the former, where there is a shoal patch $\frac{1}{2}$ a cable from the shore to the northward of a cove; and sunken rocks extend a cable from its S.W. point.

Having passed Grass Island, the harbour widens to $1\frac{1}{4}$ miles, and then gradually decreases towards its southern extremity, where it divides in two. 4 fathoms water will be found within half a mile of the head of the bays.

Jones Cove. To the westward of Isthmus Head is Jones Cove, which extends one mile in a N.N.E. and S.S.W. direction, and is 3 cables wide, with a depth of 5 and 6 fathoms. It is, however, as well as Long Harbour, exposed to a considerable pitch from the N.N.E. On the western side of the cove are three islets, and to the northward of the largest, which is Flat Islet, are two rocks awash at high water. The summit of Port Island bears from them N. 53° E., and the north end of Grass Island N. 83° E.

Bluff Head. The distance between Port Island and Bluff Head, the eastern extreme of the opposite mainland, is $1\frac{1}{4}$ miles. The land trends from thence S.W. by W. $7\frac{1}{2}$ miles to White Head, forming a sound 7 cables wide, with the shores steep to. On the north side, 2 miles from Bluff Head, is a small cove, and $3\frac{3}{4}$ miles from the same

Nob and Flat Reefs. is Nob Reef, with a flat reef 2 cables to the S.W. of it. On the northern shore, opposite to them, is another cove.

Bush Reef. $2\frac{1}{4}$ miles beyond Nob Reef is Bush Reef, and North of which, 3 cables, is Harbour Island, with a depth of 14 and 15 fathoms* between them. The mainland to the southward is 9 cables distant, but the 3-fathoms line extends 4 cables from the shore.

At White Head, which is a peninsula, the sound separates into three branches; the western arm extends $3\frac{1}{2}$ miles further, the water shoaling gradually from 5 fathoms off White Head to the bottom of the bay, where there is a road over a pass in the hills 920 feet above the sea, to the village of Cowloon, in Hong Kong Bay; the distance from high water to high water on either side being 3 miles.

In the centre of the channel, 2 miles above White Head, is a reef, which is covered at high water, bearing N. 62° E. from a waterfall on the northern shore: the channel here is 4 cables wide, with a depth of 3 fathoms.

It is high water on full and change days at 9 o'clock, and the extreme rise and fall experienced was 6 feet 4 inches, but at the neap tides the water remains very nearly at the same level.

North-west Arm. The north-western arm also extends $3\frac{1}{2}$ miles in this direction. Three quarters of a mile from White Head is Central Islet, and on the north shore are three islets, with anchorage between them and the main.

* 11 and 12 in the Chart.

The north-eastern arm, Port Plover, would in all probability be found the most eligible place to ride out a typhoon. It extends $2\frac{1}{4}$ miles to the eastward of Harbour Island, with depths of from 6 to 4 fathoms. North-east Arm, or Port Plover.

The Hunchback rises immediately over White Head, and is very precipitous on this face.

N.E. by N.,* $2\frac{3}{4}$ miles from Port Island, is Round Island, the easternmost of an extensive group of islands in the N.W. corner of Mirs Bay, the largest of which are Double, Crescent, and Crooked Islands. Double Island is the southernmost, and lies $6\frac{1}{2}$ cables to the N.E. of Bluff Head. The channel which separates it from the main to the westward is large enough for boats only. That between it and Crescent Island is one cable wide, with from 4 to 7 fathoms. Between Crescent and Crooked Islands the narrowest part of the channel is 2 cables wide, with 10 and 12 fathoms. The eastern end of Crooked Island is a remarkable peaked head. Islands in Mirs Bay.

The mainland lies $1\frac{1}{2}$ miles to the northward of Crooked Island, with a depth of from 9 to 4 fathoms, muddy bottom, and the extent of the bay westerly from Crooked Island is 5 miles, the water gradually shoaling.

On the west side of Crooked Island is a village, and opposite to it a good harbour. A very secure basin is also formed to the southward of it by Crescent and Double Islands, the entrance into which, upon the north side, is 3 cables wide; within it there is a depth of 7 fathoms water.

The northern head of Mirs Bay is steep to, and there is a remarkable peaked rock 3 cables from the shore, opposite Crooked Island.

The Island of Peng-chow lies in the N.E. corner of the bay, bearing north $4\frac{1}{2}$ miles from Gow-tow-pyah; it is 3 miles in circumference, and 148 feet above the sea. The distance between it and the nearest point on the mainland to the eastward is rather more than a mile, forming a convenient harbour, sheltered from all winds. The geological features are totally different from the adjacent land, being alluvial, shale stones forming its beaches. E.N.E. from it is a remarkable conical peak, 753 feet above the sea. Under it is the village of Namoh.

Anchorage in the N.E. monsoon will be found upon the eastern side of Mirs Bay to the southward of Peng-chow. The hills at the S.E. point rise to the height of 1,200 feet, and off its southern extreme is a small islet which bears from Gow-tow-pyah S. 77° E. $4\frac{1}{4}$ miles. To the westward of it are some rocks a cable's length from the shore, and the first point to the northward of it is perforated. The islet bears from the Nine Pin N. 34° E. 13 miles, and Single Island bears from it S. 75° E.

Along the coast which trends easterly towards Tooneang are two sandy bays. In the western bay is Coast Islet 4 cables from the shore; it has a depth of 4 fathoms inside of it.

THE TOONEANG GROUP consists of 8 islets, including Single Island and Acongchow. The northernmost island is the largest, which is 5 miles in circumference, and the summit rises like a cone to the height of 950 feet. Off its western extreme are two islets; the nearest, Net Islet, is conically shaped, and at low water there is only one foot between it and Tooneang. Peaked Rock lies $2\frac{1}{2}$ cables to the westward of it, with depths of 4 and 5 fathoms rocky bottom between them; it appears like two islets connected by a shingly beach. N. 52° W. from it is a ledge of rocks, the north end of which will always shew; there is no passage for a vessel between them. Tooneang Group.

The Junks in the north-east monsoon lie to the southward of Net Island and Peaked Rock opposite a fort on Tooneang, where there is a depth of 9 fathoms, but the ground is foul within 2 cables of the fort.

* N.W. by N. by Chart.

San-mun.

Immediately to the southward of Tooneang are three islets, forming with it a good harbour sheltered from all points except from W.N.W. to S.W. by S., called by the Chinese San-mun. The southern islet, Flat Islet, is 3 miles in circumference and 270 feet above the sea: the channel between it and Cone Islet to the northward is not quite 2 cables wide with 9 and 10 fathoms within it. Between Cone Islet and Tooneang the passage is the same width, but is crooked, and has only $2\frac{1}{2}$ fathoms. The best anchorage will be found off the south point of Cone Island in 7 and 8 fathoms.

During the prevalence of south-westerly winds the best anchorage will be on the N.E. side of Tooneang in 9 and 10 fathoms opposite a bay.

The channel between Flat and Single Islands is $1\frac{3}{4}$ miles wide; the latter is even topped, and about 200 feet above the sea.

Acongchow.

ACONGCHOW is a remarkable rock, lying 6 cables to the N.E. of Single Island, with $15\frac{1}{2}$ fathoms between them. With it in a line with the S.E. point of Single Island, bearing S. 30 W. 1 mile is a 16-feet rock. The cone upon Cone Islet bears N. 59 W. from it, and is in line with a remarkable gap on Tooneang; it rises so abruptly that there was a difficulty in finding it.

N. 48° E. from the summit of Tooneang is Middle Rock, which is just awash at high water. The bearings from it are Acongchow S. 10° W.; Point Island (off the east point of Bias Bay) N. 20° E.; Pyramid Island in Bias Bay N. 32 W. 4 miles. S. 31° W.* from it 3 cables is a reef which breaks at low water. When on it the east end of the Flat Islet on the east side of Pyramid is in line with Pillar Islet beyond it bearing N. 20° W.

Channel between Tooneang and west point of Bias Bay.

The channel between Tooneang and the west point of Bias Bay is $1\frac{1}{2}$ miles wide; both shores are steep to, with the exception of the reef already mentioned lying off Peaked Rock, near Tooneang, and a rocky ledge stretching south-westerly from the first point east of a remarkably white rock on the north shore. The hills upon this side are 2,630 feet above the sea.

Pyramid Island.

From Tooneang, Pyramid Island (so called from the rocks at the south extremity) bears N. by E. 6 miles; the distance between it and the west point of Bias Bay is 3 miles, with a depth of 9 and 10 fathoms. About it are six islets;—three on the west, two on the north, and one on the east side. The island is $1\frac{3}{4}$ miles long, and is nearly separated in two places. The highest part of it, 330 feet above the sea, is near the south end. Anchorage will be found on either side of it, according to the monsoon. The north islet off it is remarkable for two square pillars upon its southern side.

Typoong Harbour.

TYPOONG HARBOUR entrance bears West† from the north end of Pyramid Island 6 miles. On the northern shore, as you enter is a smooth conical hill, off which a shoal commences, extending 5 cables from that shore; the southern shore, which is bold, must therefore be kept on board. Vessels drawing more than $2\frac{1}{2}$ fathoms should not proceed farther to the westward than the third point on that side, as the bottom of the bay is shoal. The walled town of Typoong is upon the north side. This harbour will be found a very secure anchorage, except with an easterly wind, when the anchorage under Pyramid should be preferred.

Middle Group.

One mile and a half to the northward of Pyramid Island is Middle Group, consisting of six islets. Green islet, the southernmost, has an islet off its western end; the channel between it and Pyramid is free from danger, the only obstruction being a rock nearly level with the water's edge near the latter. Reef Islet lies $\frac{3}{4}$ of a mile north of it, and to the S.E. of it is a reef on which the sea breaks at low water. The centre of it bears from Green Island N. 18° E., and from the summit

* S. 51° W. by Chart. † W. $\frac{1}{2}$ S. by Chart.

of Reef Island S. 30° E. There is also another rock awash at low water, North 3 cables from Reef Island: when upon it, the summit of Red Islet bears E. 7° S. And there is a third N. 4° W. 1¼ miles from Reef Islet, and N. 40° W. from Red Islet.

Harbour Group. HARBOUR GROUP, consisting of nine islets, is not quite a mile from Middle Group. The southernmost are the Twins, two small islets, to the N.E. of which, 2 cables, is Shoal Island, having rocky ground extending N.N.W. 3 cables from it, in some parts of which there are only 3 feet water. Shoal Islet is separated from Narrow Island by a channel 3½ cables wide. Should this channel be used, the shore of the latter should be kept on board to avoid the shoal just mentioned. Narrow Island is 7 cables from North to South, and 2 from East to West. Round Island lies rather more than 2 cables North of it, with a depth of 5 or 6 fathoms; to the North of it 2 cables is a flat rock, nearly level with the water's edge, which is steep to.

N. by W. 6 cables from Narrow Island is North Cone, a conical rock surrounded by reefs.

Vessels wishing to anchor to the westward of Narrow Island will find this, or the channel between Tree-a-top and Cone Islet, the best to enter by. Tree-a-top lies westerly 2½ cables from the Twins, and Cone Islet is West of it 5 cables.

Big Island lies to the westward of Cone, and has a small islet with a flat rock to the northward of it. On its North side, N. 39° E. from this flat rock, is a reef which shews only at low water spring tides. When upon it the highest part of Narrow Island bears S. 58° E., and Nob Reef N. 57° E.

To the N.W. of Big Island 4 cables is Sand Patch, a low rock surrounded by sand. In the channel between the two are 3½ fathoms water: On the South side of Big Island also there is a rock level with high water.

The channel to the westward, between Big Island and the main, is 7 cables wide; there is a reef nearly in mid-channel, bearing S. 75° W. from Cone Island, and N. 32° W. from Green Island. The Bay runs back westerly from Big Island nearly 6 miles, the general depth of water being less than 3 fathoms.

Two and a half miles N.N.W. from Narrow Island is Low Island, which is 2 miles from the North side of the bay.

E. side of Bias Bay. Off the eastern point of Bias Bay are several rocks, the channel between which and the point is not safe, but that to the westward of the rocks, and between it and the rock S.E. from Point Island, may be used: it is 8 cables wide, and has a depth of 4½ and 5 fathoms.

POINT ISLAND is 8 cables' length from North to South, and 5 from East to West. Besides the rock 3 cables to the S.E. of it, mentioned above, there is another awash at high water 6 cables to the N.N.E. of it. The bearings from it are, the summit of Pyramid Island, S. 58° W., and the rock S.E. of Point Island, S. 12° E.

From Point Island the coast trends North 11½ miles. The first islet on this shore is TRIPLE ISLAND, 2¼ miles from Point Island: anchorage in a N.E. monsoon will be found between the two. Triple Island is 6 cables from the mainland, with a depth of 3 fathoms in the channel: one cable's length from its western* shore is a small rock, which is nearly level with the water.

Six and a half miles North of Triple Island is TSANG-CHOW, a low flat island with a small one S.E. of it. The channel between it and the main is one† mile wide, with 2fathoms water. A reef of rocks extends from both shores.

Fan-lo-kong Harbour. Northward of Tsang-chow the coast takes a turn to the eastward, forming the harbour of Fan-lo-kong, the entrance to which is 1½ miles wide, with a depth of 4 fathoms. At the distance of 4 miles the water shoals to 3 fathoms, and the bottom of the bay is 2 miles farther. The village of Fanlo is upon the North side of the

* Eastern by the Chart. † Half a mile by the Chart.

harbour, which will probably be found the best anchorage in Bias Bay to resort to in case of a typhoon.

Pagoda Island. PAGODA ISLAND bears from Tsang-chow, N.W. by W.* 4 miles: the depth of water varies from $4\frac{3}{4}$ to $2\frac{1}{2}$ fathoms, shoaling towards the former. It is 3 cables from the shore, and in the channel there is 9 feet water: to the W.S.W. of the island 3 cables are some rocks.

Mendoza Island. MENDOZA ISLAND bears from Point Island, S. 59° E. 8 miles. It is $2\frac{3}{4}$ miles in circumference, and will afford shelter from a S.W. wind upon its northern side. On the West side of it is an island separated from it by a channel one cable wide, in which there is 9 feet.

Tsincoe-Island. The island of TSIN-COE lies 6 cables to the North of it, the depth of water between the two being 12 fathoms. Near the centre there is a remarkable cleft.

Fokai Point. From Mendoza Island to Fokai Point the distance is $3\frac{1}{2}$† miles: Between the two, and 6 cables from the latter, is Middle Rock, 10 or 12 feet above the sea; it may be passed on either side, and a good berth in a northerly monsoon will be found to the northward of Observatory Islet, where a vessel may choose her own depth of water.

Harlem Bay. HARLEM BAY.—S. 57° W., 3 cables from Observatory Islet, is a rocky patch of $3\frac{1}{2}$ fathoms water; when upon it, the South end of Fokai Point bears S. 40° E.

Observatory Islet is flat topped, 70 feet above the sea, with a ledge of rocks which cover at high water, extending 3 cables north-easterly from it. On the north-western foot of the Fokai hills is a fort, with a tall chimney on the hill behind it. North of the fort is a creek, which extends along a sandy isthmus, and into which the junks can get at high water.

On the summit of the Fokai hills is an artificial mound, 670 feet above the sea, and upon the hill over the South point is a large fort.

The point is connected with the main by a long sandy isthmus, on the East side of which are three rocky islets. E. by N. from the northernmost of these islets is a reef, which shews at low water; the East end of Fokai Point bears from it S. 16° W. and Pauk Pyah S. 67° E.

From Fokai Point the coast trends N. 34° E., and at the distance of 9 miles is Coast Islet, lying 4 cables from the shore: shoal water over a rocky bottom extends from it 6 cables southerly, to the southward of which, and close to a flat rocky head, is an opening, a cable wide, into an extensive sound; in the channel there are 5 and 6 fathoms, the entrance into which bears N. 73° W. from Si-ting. On the southern side of it is a high conical peak (Harlem Peak) 2,100 feet above the sea. S. 25° W. from Coast Islet is a sunken rock, from which Si-ting bears E. 1° N. (?) 6 miles, and Harlem Peak N. 50° W.

Pauk Pyah. PAUK PYAH is a low flat rock bearing from the summit of Fokai S. 83° E. 7 miles. S. 12° W. from it $2\frac{1}{2}$ miles are two sunken rocks, from which the highest part of Fokai Peak bears N. 62° W.; the fort at the point N. 74° W.; the summit of Mendoza W. 1° N.; these rocks rise abruptly from 12 fathoms.

Currents. In the month of April, 1845, the current in the neighbourhood sets constantly to the westward, increasing its velocity with the flood tide, but never exceeding 1 knot per hour.

Pedra Branca. PEDRA BRANCA.—The following bearings of Pedra Branca were observed. From the summit of Mendoza, S. 32° 26′ E. From the Pauk Pyah, S. 20° 50′ E. From Tysammee Mound (the highest peak on the East side of Honghae Bay),

* W.N.W. by Chart. † $2\frac{1}{2}$ miles by the Chart.

S. 28° 57′ W. which will place it in lat. 22° 19′ 12″ N., and lon. (assuming Sir E. Belcher's lon. of Victoria to be 114° 10′ 48″) 115° 6′ 9″ E. When bearing North it appears separated into two rocks, and the summit is white; it is bold to approach, having 20 fathoms close to the outside, and 19 or 18 on the North side, decreasing to 13 fathoms in the neighbourhood of the Pauk Pyah.

TUNG-TING and SI-TING are two rocky islets, about 50 feet above the sea, lying S. 39° E. and N. 39° W. from each other, 1½ miles apart. There are sunken and detached rocks surrounding them, and the depth of water in their vicinity is 9 fathoms. Si-ting bears from the summit of Fokai N. 64° E. 11 miles, and from Pauk Pyah N. 26° W. 6½ miles. Tung-ting and Si-ting.

N. 54° W. from Si-ting is a rocky patch, upon which the sea sometimes breaks: Hat Island bears from it N. 48° E.; Harlem Peak N. 82° W. Hat Island, in a line with the S.E. end of the West point of Shoal Bay (an inlet North of Honghae Island), will carry you to the northward of it. Rocky Patch.

There is another reef, Single Rock, which breaks only at low water or when there is a heavy sea, bearing N. 63° E. from Si-ting 3 miles. Upon it Tung-ting bears S. 35° W.; Hat Island N. 13° E.; Harlem Peak W. 2° N. Reef.

HONGHAE BAY.—I recommend vessels not to pass to the westward of Tung-ting or Si-ting, nor into the N.W. part of Honghae Bay, as they will find a heavier sea there than outside.

The island of Honghae bears N. 50° E. 8½ miles from Si-ting; it is 5 cables in length from East to West, and 3 from North to South, and will afford shelter on its northern side during southerly winds. Honghae.

S. 20° E. from its summit are two rocks, which are visible at low water; they lie 3 cables from the shore, and from them the S.W. point of Honghae bears N. 65° W. being in line with the South end of Inside Island; and the East point of Honghae is in one with the highest part of the western point of Shoal Bay, bearing N. 13° W.

Shoal Bay lies 3 miles to the N.N.E. of Honghae; the entrance to it is 2 miles across, and within the heads less than 3 fathoms will be found. In the N.E. part is an inlet, with 6 feet of water only over the bar at low water, which communicates with Hei-che-chin Bay. By report it is navigable for small boats only. Shoal Bay.

Hat Island is a peaked rock, 2¾ miles to the westward of Honghae; the translation of its Chinese name is Fowl's Heart, which it more resembles than a hat; there are detached rocks about it. Hat Island.

Inside Island lies 5 miles to the N.W. of Honghae; it is one mile from North to South, and but little more than a cable wide. Off its S.W. end 3 cables are detached rocks: in the bays, East and West of it, no more that 2½ fathoms will be found, and there is generally a long ground swell rolling in. Inside Island.

West, 3 miles from Inside Island, is the embouchure of a large stream, but with only 6 feet over the bar at low water.

To the eastward of the East point of Shoal Bay, 7 cables, is a rocky ledge, part of which will always shew.

The entrance to Tysammee Inlet bears N. 81° E. 9 miles from Honghae: the channel is 5 cables wide and has 2½ fathoms at low water. The northern shore is shoal to, and near the entrance, 5 cables from the beach, are some rocks which are awash at spring tides. Tysammee Mound bears from them S. 20° E. and the low conical hill at the back of the town, S. 73° W. The southern edge of the channel is confined by a sand spit, on which is 3 feet. Tysammee Inlet.

The North end of the sand spit, under Entrance Hill (the hill on the South side of the inlet as you enter) in one with the conical hill upon the North shore at the

back of the town, bearing N. 83° E. will lead you in rather upon the South side of the channel.

The West extremity of the sand spit upon the South side of the entrance is $1\frac{1}{4}$ miles from the shore, and the North end of it bears West from Entranee Head.

The bank commences under Tysammee Mound $3\frac{1}{2}$ miles N.W. of the S.E. point of Honghae Bay. Tysammee Mound is the northern and higher of the two peaks on the point: it bears from Honghae S. 81° E. $9\frac{3}{4}$ miles, and is 960 feet above the sea.

Goat Island. GOAT ISLAND lies S.E., 3 miles from the eastern point of Honghae Bay, and is the southernmost and largest of the group of islets here; on its N.W. side is a very good roadstead in the northern monsoon: the channel to the North between it and the main is not navigable. The walled town of Tsieching is rather more than a mile inland from the beach to the North of Goat Island.

Reef Islets. Three miles S.E. by E. from Goat Island, are the REEF ISLETS; in using the channel between, care must be taken to avoid a sunken rock, bearing N. 87° E. $1\frac{1}{4}$ miles from the summit of Goat Island, and N. 53′ W. from the North end of Reef Islets. The southern islet is the largest of the group. Reefs extend one cable southerly from its East extreme. Vessels may pass between them and the middle reef, which lies $1\frac{3}{4}$ miles to the northward, the depth of the water being 7 or 8 fathoms, but must bear in mind that the reefs extend more than 2 cables northerly from the Reef Islets; the northern rock bearing W. $\frac{1}{2}$ S. from Che-lang-hiau. It is not advisable to pass to the North of Middle Reef.

Che-lang-hiau. CHE-LANG-HIAU bears N. 75° E. $5\frac{1}{4}$ miles from Reef Islets; the southern end of it is about 80 feet above the sea, and is separated from the main by a rocky channel.

On the point to the N.N.W. of it is a fort, and to the West of it is a small bay, which will afford shelter in the N.E. monsoon; there is a sunken rock, having one foot on it at low water, bearing N.W. by W. $5\frac{1}{2}$ eables from the fort. From it the summit of Che-lang-hiau bears S. 52° E., and is in a line with the southern rock off the Fort Point, and Flat Rock bears S. 48° W. The latter lies W. by N. $1\frac{1}{2}$ miles from Che-lang-hiau, the distance between it and the rocks off the West point of Fort Bay is $5\frac{1}{2}$ cables, and between them is a sunken rock, bearing from Flat Rock N. 34° W. and from the fort west.

Kin-yu, or Kem-sue. HU-CHI-CHIN BAY.—N.N.E. $4\frac{1}{2}$ miles from Che-lang-hiau is Kin-yu or Kem-sue, a rocky islet, 5 eables in extent, in a N.E. and S.E. direction. The highest part of the Islet is to the N.E. under which is a high rock. The shores are bold to; in the channel between it and the South end of Pauk-shao Point, which is $1\frac{1}{2}$ miles wide, is a depth of 7 and 8 fathoms; off the point is a large white rock surrounded by reefs.

Pauk-shao, or Pe-sha-hu. PAUK-SHAO, or PE-SHA-HU, Bay will afford very good shelter, unless the wind comes to the eastward of South, there being 5 fathoms water due North of the eastern point: On a point on the South side of the entrance to the inner bay is a fort, to the West of which less than 3 fathoms will be found.

The eastern point of Hu-chi-chin Bay bears East 11 miles* from Che-lang-hiau; near the southern extremity is a remarkable conical hill, Chino Cone, which, together with the islets Tung-ki and Si-ki, render this portion of the coast readily recognized.

Tung-ki. Tung-ki bears S. 42° E. $2\frac{1}{4}$ (?) miles from Chino Cone; it is about 18 feet above the sea, with some detached rocks upon its eastern side, and three rocks awash half a cable from its N W. side: the channel between it and the main is a mile wide,

* E.N.E. 14 miles by the Chart.

with a depth of 9 and 12 fathoms. North of it one mile, and East 7 cables from the South end of Chino Point, is a cluster of rocks (called Tien-wi-peau in the chart), nearly level with the water's edge.

Si-ki bears from Tung-ki S. 66° W. 3¼ miles, and from Chino Cone S. 26° W. It is about 80 feet high, rises abruptly, and is cleft at the summit; between Tung-ki and it there are 11 and 12 fathoms. Si-ki.

West from Chino Cone there is a reef of rocks extending nearly 4 cables from the shore, the outer of which will not shew at high water unless there is a considerable swell. When upon it Tung-ki bears S. 49° E., Si-ki S. 19° W., and the eastern white rock in the northern part of the bay is in one with Round Hill bearing N. 31° W. Reef.

CHINO BAY lies immediately to the north of Chino Cone; there are a fort and a small village in it, opposite to which the water is shoal, the 2-fathoms line extending 5 cables from the shore. Vessels will find smoother water by standing farther to the northward and anchoring to the eastward of Yellow Stone, which is the southernmost of the group of rocks in the N.E. part of the bay, where there is a depth of 3¾ fathoms. The walled town of Kie-shi-wei lies E. by N. from the Yellow Stone 3 miles, and will be seen over the low land from this anchorage. There is a creek leading up to the town which will admit junks at high water. Chino Bay.

Between the Yellow Stone and the rock 7 cables N.W. of it is a channel with 4½ fathoms; but vessels are recommended not to stand farther in among the rocks, as there are several reefs which cover at high water. There is one outside the rocks which vessels standing into the bay may get upon unless it is pointed out; it bears N. 61 W. 1½ miles from the Yellow Stone, in which direction the Yellow Stone is in one with the north end of the Chino hills; the eastern white rock bears from it N. 63° E., the western white rock, N. 50° W. The east and west rocks are the two largest of the group. Vessels of light draft may stand in towards the beach to the northward of the western white rock, where they will find from 3¾ to 2¼ fathoms, the water shoaling gradually towards the beach. Hu-chi-chin Bay.

The village of Kensiang lies in the N.E. corner of the bay immediately under Round Hill. There are not more than 3 fathoms to the northward of the hill at the S.E. point of the bay. Two rivers empty themselves into the northern head of the bay, neither of which has 9 feet over the bar, and the sea usually breaks all across them. The western is the one which communicates with Honghae Bay.

On the N.W. side of the bay the hills rise suddenly from the plain through which these rivers flow and attain an elevation of 1,850 feet.

From Chino Point to Cupchi the distance is 17 miles, the coast trending E. by N. At the distance of 5 miles is a point with black rocks off it, and a square white rock on its S.W. side. N.W. from the latter, 1½ cables, is a sunken rock. This bay will not afford shelter.

The mouth of the RIVER HUTONG is 8½ miles from Cupchi; it has 6 feet over the bar, and upon the south bank of the river is a fort. S.E. by E. from the latter 1½ miles is an islet; the channel between which and the main is obstructed by reefs. Off the islet, on its northern and eastern sides, are detached rocks and reefs, one of which has a curious knob upon it. Hutong River.

Five miles to the westward of Cupchi the hills come down to the beach; on their northern peak there is a remarkable boulder, and 1 mile from the point is a flat rock with sunken rocks between it and the main.

CUPCHI POINT rises to the height of 210 feet above the sea; on it are several rugged rocks, and near the south end is a dilapidated fort. South from the point 1½ miles is Flat Rock, 14 feet above the sea, between the two are two islets and several rocks. The junks use the passage between Flat Rock and that to the northward of it, which is 4 cables wide. Sunken rocks lie to the eastward of both, and will be Cupchi Point.

detected by the discoloured water. Between the islets and the point the channel is 2 cables wide, the bottom is rocky, and the soundings irregular.

From the point to the westward of the south fort is a rocky ledge extending 2 cables from the shore, the outer end of which breaks at low water spring tides.

Vessels will find good anchorage to the southward of the Shag Rock, which is 3 feet above water, in the North East monsoon, and can choose their depthof water. The latter is 5 cables from the shore, and has $2\frac{1}{2}$ fathoms around it, except to the S.S.E., where there is a reef attached to it.

Cupchi. On the main to the East of it is a fort at the entrance of the river leading to the walled town of Cupchi.* Over the bar there are 9 feet water, but the channel is intricate. The town is $1\frac{3}{4}$ miles from the entrance, which is further defended by another fort and a martello tower on the sand. Near the town is a low pagoda.

Four and a half miles from Cupchi Point is the Black Mount, 230 feet above the sea, and a half mile from the beach, rising, as described by Ross, from a red sand down. Reefs extend some distance from the shore under the mount, and from the coast towards Cupchi.

Tungao. The village of TUNGAO is situated in a bight of the coast N.E. by E. 16 miles from Cupchi, the intervening coast being low and sandy. To the westward of Tungao is a river, over the bar of which the sea breaks at low water. On the North side, at the entrance, there is a pagoda, and there is another on the hills, one mile North of it. Off the bar the water shoals suddenly, to avoid which the fort at Tungao must not be brought to the eastward of N.E. $\frac{1}{2}$ N. when within $1\frac{1}{2}$ miles of it. This will be found a very good roadstead in the N.E. monsoon.

White Rock. Three and a half miles S.E. by E. from Tungao is White Rock, which forms a good mark for the recognition of the coast; between the two is another creek with a fort upon the hills East of it.

The land near the coast is low hereabouts with several fishing villages in the sandy bays. The boats belonging to these villages are very numerous, and being of a different shape and smaller than those off Haimun and Cupchi will enable a vessel to identify her position in default of astronomical observations.

Breaker Point. BREAKER POINT lies East 7 miles from the White Rock, and there are several rocks between them. The bay to the westward of Breaker Point, which is fronted by a flat reef and an islet, cannot be recommended as a place of shelter, being full of rocks. Breaker Point will be known from seaward by a black dome-shaped hill 2 miles from the shore which rises to the height of 280 feet. From a red sand drift to the westward of it is a long range called Slope Hill, 1,030 feet high, with a sudden dip to the westward; on the southern extremity of the cape is a remarkable rocking stone. The S.E. and S.W. points of the land on each side of the rocking stone have small islets off them, and forts upon the points opposite to them; detached reefs lie off the shore, which should not be approached within half a mile.

Tides. The observations on the tides during the months of January to May, between Breaker Point and Hongkong, made the ebb set to the eastward, but, generally speaking, very little tide was experienced. To the eastward of Breaker Point, however, the flood sets to the eastward, which is its direction throughout the N.E. coast of China. The times of high water on full and change days from Hongkong to the Yang-tse-kiang, not deviating more than from one to three hours before the moon's transit, unless obstructed by local causes, with the exception of the vicinity of Breaker Point, where it was high water at $3\frac{1}{2}$ P.M. on the full moon in January 1845.

Chin-hae Creek. The creek leading to the walled town of CHIN-HAE affords a passage only for

* The town is named Kiahtsz in the Chart.

small junks. On the east side, near the entrance, is a fort, which bears N.E. by N. 5 miles from Breaker Point; indifferent shelter might be obtained under it by vessels drawing 12 feet, in the North East Monsoon, but it would be found an awkward place should the wind come to the southward of East.

From the fort the coast trends N.E., $1\frac{3}{4}$ miles to ROCKY POINT, which is low. Sunken rocks abound along this portion of the coast, some of which are 6 cables from the shore. Rocky Point.

HAIMUN BAY.—At Rocky Point the coast line turns to the northward; at the distance of $4\frac{1}{2}$ miles, there is a head-land, with reefs extending $2\frac{1}{2}$ cables to the East of it. Haimun Bay.

The south-eastern part of Haimun Bay bears N.E. $\frac{1}{2}$ E. 7 miles from hence. The highest part of the hills at the back of it forms a double peak: on the highest of the two peaks there is an artificial mound, 590 feet above the sea. On the hills immediately over the point is a small Joss house, with some poles near it, upon one of which a light is occasionally hoisted. Off the point, 9 cables, are two sunken rocks, on which the sea breaks when there is a heavy swell. The bearings from the southern one are Haimun Peak, N. 9° E.; Cape of Good Hope, N. 65° E.; Rocky Head, at the entrance of Haimun River, N. 40° W. This head in line with the western peak of Pagoda Range will carry you to the southward of it. There is a passage between it and the shore.

Near the anchorage off Haimun is another rock, the bearings of which are, Rocky Head, N. 48° E. 9 cables; eastern end of Haimun, E. 16° S.; Haimun Peak, E. 10° N.; South Pagoda, N. $8\frac{1}{2}$° W.

Vessels drawing more than 14 feet must not bring the fort upon the East side of the first sandy bay to the eastward of N.E. by E. $\frac{1}{2}$ E., unless they are more than 6 cables from the shore, as there is a rocky ledge extending that distance from the fort point, and terminating in a rock which shews at low water, bearing W. 8° N. from the fort, distant 6 cables.

The peak on the west end of Pagoda Range, mentioned as a mark for avoiding the reef outside, is in line with a large stone near the centre of the bay, East of the Rocky Head, bearing N. 39° W.* when upon it; and a large stone near the west end of a sandy bay extending westerly from the fort is in line with the highest part of the rugged range to the north of Haimun Peak, bearing N. 10° E. The channel between it and the western shore of the bay is 4 cables wide; vessels will find 3 fathoms water to the northward of it. There is another sunken rock bearing S. 48° W. from Rocky Head, 9 cables.

To the westward of the Rocky Head is the mouth of a stream, one mile wide, with $1\frac{3}{4}$ fathoms over the bar at low water: the walled town of Haimun is on the left bank† of the river, not quite a mile from the Rocky Head. North of the town, the river takes a turn to the westward, and is broad, with many mud banks dry at low water.

The land to the northward is low, and the distance across to the Santowshan Estuary is 3 miles; and in one of the Chinese charts of the coast there is a channel through: but in another the passage is closed. In all probability there will be found a communication by canal. In this neighbourhood are three Pagodas, two of which are upon hills, and one on the low land; the former, in clear weather, are seen from Namoa.

From Haimun Bay to the CAPE OF GOOD HOPE the coast trends E. 19° N., the distance being 9 miles; detached rocks lie half a mile from the shore for the distance of $3\frac{1}{2}$ miles from the former, when the sandy beach which connects the two bays is steep to. Cape of Good Hope.

* N. 43° W. by Chart.

† The right bank in entering.

The southern side of the CAPE OF GOOD HOPE affords secure anchorage in the North-East monsoon; the best shelter will be found in the first sandy bay, near a fort and a large tree. Sunken rocks extend a cable's length from the point under the fort, otherwise the bay is clear and the lead your guide.

On the western side of this bay is a remarkable peaked rock, and in the west end of the bay beyond is the mouth of a creek which communicates with the Santowshan Estuary rendering the Cape of Good Hope an Island. There are only 7 feet water over the bar, which is barely a cable across, and is defended by a fort. The reefs extend south-westerly from the fort 3 cables, to a rock which is always above water, rendering the straight channel impassable for the large fishing boats at high water, which at this time of tide leave the rock to the eastward, and pass between it and the islets off the fort. In the event of a ship's company being obliged to take to the boats, this channel would be the best route to Namoa, as, off the Cape of Good Hope, there is a tide race, in which, during a breeze, few boats would live.

POSITIONS OF SOME OF THE PLACES MENTIONED IN THE FOREGOING DIRECTIONS.

Name.	Particular Spot.	Lat. N.		Long. E.	
		°	′	°	′
Ninepin	Summit	22	16	114	22
Basalt Island	Summit	22	19	114	22
Hunchback	Summit	22	24	114	15
Sharp Peak	Summit	22	25	114	22
Port Island	Summit	22	29	114	21
Single Island	East Summit	22	24	114	39
Tooneang	Summit	22	27	114	37
Pyramid Island	Summit	22	35	114	42
West Peak of Harlem's Bay	.. ..	22	41	114	47
Narrow Island	Summit	22	40	114	38
Pagoda Island	Pagoda	22	45	114	38
,, ,,	Summit	22	44	114	42
Harlem Peak	Summit	22	41	114	54
Mendoza Island	Summit	22	31	114	57
Pedra Branca	Summit	22	19	115	6
Pauk Pyah	Summit	22	33	115	0
Siting	Summit	22	39	115	3
Tungting	Summit	22	38	115	4
Inside Island	Summit	22	47	115	25
Honghae Island	Summit	22	44	115	11
East Peak at Entrance of Shoal Bay	Pagoda	22	47	115	13
Tysammee Middle	Summit	22	42	115	20
Cone Peak	Summit	22	48	115	27
Goat Island	Summit	22	38	115	28
Reef Island	Summit	22	36	115	30
Che-lang-hiau	Summit	22	38	115	33
Kem-sue	Summit	22	42	115	36
Pauk-shao	Highest Hill	22	44	115	34
Tung-ki	Summit	22	42	115	45
Chino Peak	Summit	22	44	115	47
Yellow Stone	Summit	22	48	115	45
Hutong Island	Summit	22	47	115	57
Nob Peak	Summit	22	50	115	58
Cupchi	Point Hill	22	48	116	4
High Double Peak	East Peak	23	16	116	0
Low Double Peak	North Peak	23	0	115	56
Black Mount	.. ..	22	51	116	3
Tungao	Low Pagoda	22	57	116	13
Slope Hill	.. ..	23	0	116	19
Breaker Peak	Islet off it	22	55	116	25
Chinghae Fort	.. ..	22	59	116	27
Haimun Peak	Summit	23	11	116	33
C. of Good Hope	Summit	23	14	116	47

Remarks on River Min, by Capt. Collinson, R.N. 11 *Sept.*, 1845.

On examination, the knoll at the entrance of the river, which was found to have only 9 feet at low water in 1843, has now 13 feet over it, and it has moved to the northward, rendering it advisable to pass to the southward of it, in the event of passing the bar at low water, for which purpose Rees Rock should be brought in one with the foot of Square Peak instead of the summit, but with the old leading mark on. The Plover crossed the bar at neap tides one hour and a half before high water, and never had less than 4½ fathoms.

There is a passage to the northward of the Middle Ground, which lies to the westward of the Kin-pae-mun, but it is narrower than that upon the southern side of the river.

The tide sets with considerable velocity across the channel in the vicinity of Rees Rock, and, with an ebb tide, the Plover grounded on the northern shoals, having missed stays, owing to the lightness of the breeze.

We endeavoured, but without success, to find a channel through the shoals on that side, not finding more than 6 feet at low water.

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